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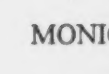
WATERBIRTH: WOMEN'S PERCEPTIONS OF WARM WATER IMMERSION FOR LABOUR

by

MONICA A. SAGER 

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA

SPRING 1996

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UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled WATERBIRTH: WOMEN'S PERCEPTION OF WARM WATER IMMERSION FOR LABOUR submitted by MONICA A. SAGER in partial fulfillment of the requirements for the degree of MASTER OF NURSING.

Dr. P. A. Field (Supervisor)

Dr. V. Bergum (Co-Supervisor)

Professor J. Relyea

Dr. S. Smith

Date: 24 January 1996

A PERCEPTION OF PAIN FOR WOMEN WHO LABOUR IN WATER

Your pain is the breaking of the shell that
encloses your understanding.
Even as the stone of the fruit must break, that
its heart may stand in the sun, so must you
know pain.
And could you keep your heart in wonder at
the daily miracles of your life, your pain
would not seem less wondrous than your joy;
And you would accept the seasons of your
heart, even as you have always accepted the
seasons that pass over your fields.

Source: Gibran, K. (1995). The Prophet. New York: Knopf. (Original work published 1923)

DEDICATION

To our great-grandmothers and grandmothers,

To our mothers, aunts, sisters, and daughters

and all future children yet to be born.

ABSTRACT

In 1889, a physician named Alice Stockham wrote: "To be well born is the right of every child" (after p. xiv). One hundred years later it is still questionable whether children are "well born" even amidst an era of advanced obstetrical technology. In this study, the researcher explored an alternative birthing method known as 'waterbirth' from the woman's perspective with the aim of increasing understanding about what it is like to have a waterbirth. After conducting this study it seems that the option of a waterbirth may be one way to help reduce the regularly occurring interventions that surround labouring women today so that more children may have the opportunity to be well born.

The findings from this study were divided into two sections: aspects of water and mechanics of using water. From these data, eight key themes emerged that revealed important components of a waterbirth experience: context, properties, process, attitude, tub/ pool characteristics, position, maternal outcomes, and newborn outcomes.

The purpose and findings from this study focused on the woman's perception of waterbirth. The findings revealed that waterbirth is an enjoyable and efficacious way to labour and give birth for some women -- namely, water people or baths persons who have a positive mind set toward their labour, birth, and using water in childbirth.

ACKNOWLEDGMENTS

This study could not have materialized without the encouragement and support from the women in this study. The women who volunteered to share their intimate stories about labouring, mothering, and using water in labour and or birth brought a quest, to better understand what it is like to have a waterbirth so that labouring women may benefit in the future, to life because of their willingness to share so openly and freely within demanding life schedules. I am indebted to these eleven women for their participation and for giving me the opportunity to seek answers to questions I had about waterbirths over the past eight years.

I would also like to acknowledge the wonderful midwives I met during the course of this project. Not only did these women provide me the opportunity to meet their clients, but perhaps more importantly they provided me with the insight into their work and how important it is to return labour and birth back to the woman and her family. This project would never have been quite as rich without the continuous support from these special women. I am deeply grateful for their assistance and profoundly grateful for their progress in childbirth practices amidst the current health care climate.

Throughout this project, I had the opportunity to work with another wonderful group of women -- namely my thesis committee, Dr. Peggy Anne Field, Dr. Vangie Bergum, Professor Joyce Relyea, and Dr. Susan Smith. I have learned more in this past year from these four women then I ever imagined was possible, and am deeply grateful for their encouragement and for stimulating my thinking and for providing fresh perspectives on my work. In particular, I would like to thank Dr. Peggy Anne Field for

her never ending support, skilled guidance, and attention to detail. I felt privileged to have had the opportunity to see the qualitative research process through her eyes. I will always remember our discussions about labour, birth, and other issues about women's health which were paramount to my learning.

In closing I would like to introduce the most important people in my life who made this whole project possible. God knows that this work would not have been possible without the undying love and support from my family 'back home on the island'. Their daily phone calls, letters, and surprises in the mail gave me the energy to fulfill this longtime dream to learn more about waterbirth. In particular, I want to thank Peter who was always there for me no matter what hour of the day or night to share this experience with me and for 'picking up the pieces' at the end of the day. I also want to thank my little girl Alanna whose wonderful hugs and cheery face helped me to remember why I was working so hard and who reminded me to keep my life in perspective.

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I. INTRODUCTION

Statement of the Problem

Today, women predominantly labour and deliver their babies in hospital. This means that women will be under the care and supervision of the obstetrical staff in the chosen institution. Once a labouring woman is admitted to the labour and delivery unit, she is introduced to the culture of this system which tends to be technologically focused (Jordan, 1993).

Although advanced medical technology has provided women with the promise of a safe labour for a woman, and live delivery of her baby, the labouring woman and her family may perceive their birth experience as a less than positive event. However, this promise has not always held up, in that interventions themselves may lead to iatrogenic conditions that lead to complications, such as Cesarean section or secondary fetal distress (Hannah, 1995; Johnson, 1995; Keirse, 1995; Larimore, 1995; Lieberman, 1995; Thorp, 1995). We as health care providers for labouring women and their families, need to recognize the need for a more holistic approach to managing labour and birth balancing the security of advanced medical technology with a humanistic and caring approach. In Canada, the recent rebirth of using water to facilitate women in labour appears to be an holistic approach that facilitates positive birth experiences.

Having water available for labouring women appears important for three reasons. First, water is a medium that seems to rejuvenate the soul and promotes relaxation. For example, some people find this sense of rejuvenation when they visit the ocean, sit next

to a waterfall inside a building or outdoors, or simply in their bath or hot tub in the privacy of their own homes. Harper (1994) concurs with this point:

> Without understanding exactly why, most people take comfort in the presence of water; the mere sight of it in pools or ponds, the sound of it rushing over a bed of rocks, lapping onto the shore or crashing onto the sand, the smell of it in the air, the feeling of it upon the skin. They find it bracing or invigorating, soothing or sensuously relaxing. (p. 17)

Second, water is basic to life. Initially, we develop from a watery environment within our mother's womb until we are born. Once we are born, our body is comprised mostly of water. Perhaps this is the reason why we are so attracted to water. In essense, our body is an 'internal ocean':

> The water in our cells, connective tissues and blood stream contains many dissolved minerals, mainly sodium and chloride. Thus within every cell there is a miniature sea. Hence our tissue fluids and sweat are salty to the taste. Our very essence is an internal ocean. (Balaskas & Gordon, 1992, p. 23)

Without water, we can only survive for a short length of time (*Taber's Cyclopedic Medical Dictionary,* 1985, p. 1871).

Third, water has a spiritual quality, like earth, it is "symbolic of the Great Mother and is associated with birth, the feminine principle, the universal womb and prima materia" (Balaskas & Gordon, 1992, p. 23). In many religions, water is used for spiritual renewal and purification through sprinkling or immersion. For instance, this theme is recalled in the story of John the Baptist at the Jordan River (Matthew 3: 5-6, 11), and when Jesus washed the feet of his disciples at 'the Last Supper' (John 13: 5-7, 10). In this sense, water signifies renewal, rebirth, and purification. Since water rejuvenates the soul,

promotes relaxation, is the essence of life, and spiritual in nature, it seems only natural that some women would feel drawn to labour and or give birth in water.

The notion of having a bath to soothe menstrual aches, muscular discomforts, or as a means of relaxing after a long and arduous day is familiar to North Americans. Perhaps then, the idea of soaking in water to ease labour could also become as familiar a ritual. A study was conducted at Dr. Michael Rosenthal's Family Birthing Center (FBC) at Upland, California, from February, 1985 to June 1, 1989. Church (1989) discovered that "of the 831 [women] who used warm water immersion during their labour, 483 gave birth in the water with good Apgar Scores; and there was only one minor maternal infection" (p. 165). Rosenthal (1991) notes that from this sample of women who experienced waterbirths, "immersion produced beneficial changes that warrant further investigation" (p. 46). These beneficial changes were a significant reduction in blood pressure of hypertensive clients, and a decreased perception of pain caused by a relaxed disposition. Which Rosenthal attributes to enhanced endorphin production, lowered catecholamine levels, and a more upright posture than that which is assumed during immersion. In addition, of the 1,400 women who had waterbirths at the FBC between 1985 and 1991, the episiotomy rate was between 5% to 10%. This is compared to an episiotomy rate of 40.3% at the Royal Alexandra Hospital in Edmonton (L. Breitkreuz, personal communication, February 27, 1995), 54% from a Canadian multicentered trial (Klein et al., 1993), 65% from an American study (Thacker & Banta, 1983), and 82.6% from a randomized controlled trial that compared selective with routine use of mediolateral episiotomy for 2606

women in 8 public maternity units in Argentina (Anonymous, 1994, p. 486).

Research to date suggests that women benefit physiologically from waterbirths. The benefits that have been identified are non-pharmacological pain relief, a shorter duration of labour, less perineal trauma, and fewer interventions (Brown, 1982; Burke & Kilfoyle, 1995; Church, 1989; McCandlish & Renfrew, 1993; Odent, 1983; Rosenthal, 1991). However, other research findings suggest that waterbirths offer no benefits physiologically and could possibly be considered hazardous. Schorn, McAllister, and Blanco (1993) reveal that "water immersion did not alter the rate of cervical dilation, change the contraction pattern, change the length of labour, or alter the use of analgesia" (p. 336). More seriously, in a retrospective study of 89 women who had waterbirths, infants who were born more than 24 hours after rupture of membranes had significantly lower Apgars at 5 minutes compared to the control group who did not have waterbirths (Waldenstrom & Nilsson, 1992). Findings from these studies suggest that more research is needed to assess the safety and effect of warm water immersion for labouring women. McCandlish and Renfrew (1993) would agree: "Despite widespread and increasing use of immersion in water during labour, birth, or both in many different countries, no reliable information is available about its advantages, hazards, and resource implications" (p. 79).

Few researchers discuss the psychological effects of waterbirths. Brown (1982), Church (1989), Daniels (1989), Rosenthal (1991), and Waldenstrom and Nilsson (1992) suggest that there is some merit in relation to the psychological outcomes of waterbirths. The psychological effects of waterbirths are discussed in terms of how the

physiological changes during a waterbirth affect the psychological outcomes in the labouring woman. The psychological outcomes were a reduction in mental tension, feeling 'weightless', and a more relaxing and enjoyable labour and birth experience. Although these authors suggest that there are psychological benefits for women who choose to labour in water, the psychological outcomes of waterbirths have not been reported in other studies. In addition, these benefits were based on external observations and physiological parameters alone and not assessed from the labouring woman's perspective. There was no research that reported any negative psychological effects following a waterbirth experience.

While research has been done on the physiological outcomes of using water in labour and birth, little research has been done on the psychological impact of labouring in water. Claims have been made that using water in labour results in a more relaxing and enjoyable birth experience (Brown, 1982; Church, 1989; Daniels, 1989; Rosenthal, 1991; Waldenstrom & Nilsson, 1992), but this has not yet been substantiated through research. Findings from this study may add to our knowledge of the value of waterbirths and could lead to a change in care of women in labour. If there are positive psychological outcomes, then waterbirth should be offered as another alternative to women in labour. Clearly the need for further research in this area has been substantiated in order to provide the labouring woman and her family with another option to enable them to have a positive birth experience.

Purpose of the Study

The purpose in this study was to discover what it was like for women to labour in water. By conducting this study, our knowledge of using water in labour and or birth would increase and could lead to a change in the care of women in labour.

Research Question

The principal research question was: How do women perceive their waterbirth experience?

For the purpose of this study, *waterbirth* refers to women who labour in water and who may or may not choose to deliver in water. The option to deliver in water was left open in this definition so that the chance of maintaining a large enough sample would be possible.

Organization of the Thesis

This thesis is arranged in five chapters. In Chapter One, the statement of the problem, purpose of the study, and research question is delineated. Chapter Two composes a review of the literature that includes the history of using water in childbirth, with theoretical and empirical literature relevant to the research question. Chapter Three provides an outline of the research design and methods used in this study. Included in this chapter is a discussion of the steps taken by the researcher for: sample selection, data collection, data analysis, reliability and validity, and ethical considerations.

The findings from this study are presented in Chapter Four. Within this chapter, the characteristics of the sample are described. Included in this description of the sample

is a discussion of why a participant was considered a negative case. The findings from this study are divided into two parts. Part One describes four aspects of water which influenced how women perceived their waterbirth experience. Part Two provides three conditions that need to be considered in order to understand the mechanics of using water, and to assess if waterbirth may indeed be a viable option for a particular woman. Each section is supported with extensive quotations from the experiences of each of the participants.

In Chapter Five the findings are discussed utilizing relevant literature to support the conclusions. Implications of the findings for nurses, midwives, and other health professionals are given with respect to clinical practice, education, and suggestions for further research.

II. REVIEW OF THE LITERATURE

What does it mean to have a waterbirth? According to the literature it could mean a variety of things: labouring in water, giving birth in water, both labouring and birthing in water, risking the health of the woman, risking the newborn's well-being, a dangerous 'fad', an innovative therapy, or a method of childbirth that has been around since ancient Egyptian times. Until one has experienced a waterbirth, it is difficult to understand what it truly means. Therefore, this question may be best answered by: conducting a review of the literature, and by asking women what it is like to have a waterbirth from their perspective.

Field and Morse (1985) recommend that an extensive review of relevant literature be critically examined prior to undertaking a qualitative study. By addressing the literature review in this way, researchers become open and informed, guided by their derivations from theoretical explanations from the literature, but not restricting them to fitting the data observed from the real world into what was previously discovered in the literature. However, it is important to also delineate the methods used in conducting the review of the literature; this way the reader may assess the rigor and findings of the analysis (Cooper, 1982). An extensive review of the literature was conducted by: utilizing the computerized databases CINAHL and Medline with the term 'water birth' under subject heading, accessing the Rawlinson Rare Book Collection of the J. W. Scott library manually for relevant historical literature, following up the reference lists of located key articles, obtaining literature from the Waterbirth Conference which was held October 1994, in Calgary, utilizing the information that was recently acquired from the

11th Annual BIRTH conference in Baltimore, Maryland in October 1995, and from the proceedings of the International Waterbirth Conference in London, England, April 1995. The following literature review and analysis covers the published material from nursing, midwifery, and medicine (obstetrics).

In the review and analysis of the literature the following topics are discussed: waterbirth from a historical perspective, the concept of waterbirth based on findings from descriptive, theoretical, and empirical literature, birthing tub/ pool considerations, waterbirth from a physiological standpoint, and waterbirth from a psychological perspective. The focus of this literature review is on the maternal aspects of waterbirth. Newborn outcomes will be discussed briefly in the physiological literature.

Waterbirth: An Historical Perspective

The term 'waterbirth' was not coined until the early 1960s when Tjarkovsky first assisted women to labour and give birth in water in the East. A review of historical literature indicates that, 'waterbirths' have been occurring for centuries. To better understand how waterbirth came about as it is known today, the use of water for healing will be discussed first; followed by, the use of water for childbirth from a historical perspective.

Water for Healing

Since Aristotle's time, water was believed to be crucial to life (Harper, 1994). However, the healing properties of water were not recognized, or at least not recorded, until the nineteenth century. One hundred and fifty years ago, an aberrant medical

practice called hydropathy began to take root in the United States (Sklar, 1984). Hydropathy, the use of large and small amounts of water both internally and externally for the treatment of disease, became known as a welcome alternative to the contemporary medical practices of the day. Hydropathy was thrilling to the people of the nineteenth century because it represented more than just another cure for ailments; hydropathy represented a health care reform, and a change in the way society perceived women and their roles (Cayleff, 1987; Donegan, 1986; Sklar, 1984).

One of the earliest documents on the use of water for healing is found in a book written by a physician named Cullen in 1807. While this is the earliest written record describing water used in this way, it is Cullen's contention that water had been used for healing for centuries. The following discussion will examine how one physician used water for healing in the early nineteenth century.

Hydropathy: Early Nineteenth Century

Although the use of water for treatment of disease was not called 'hydropathy' until the mid-nineteenth century, physicians of the early nineteenth century were using water to treat and in some cases cure, disease. In the following passage, Cullen (1807) describes how water was used to treat 'fpafm' (spasm) in a patient which was a 'common' complaint of the day. Cullen's book is printed in 'old English' form, using 'f' to replace 's'. For ease of reading the quotations used will be presented in standard English form:

> The external means of taking off the spasm of the extreme vessels, is warm bathing. This was frequently, and in various circumstances, employed by the ancients; but till very lately has been neglected by modern physicians. As the heat of the bath stimulates the extreme vessels, and, with the occurrence of moisture,

> also relaxes them, it seems to be a safe stimulus, and well suited to take off the spasm affecting them. (p. 94)

A patient had a 'good effect' from this treatment if the patient tolerated the treatment easily, if it relieved delirium, and if it induced sleep (Cullen, 1807).

Hydropathy: Mid to Late Nine*eenth Century

Hydropathy, generally using cold water, developed into a 'water-cure' movement in the United States from 1843 to 1900. Catharine Beecher, a well known educator and daughter of a famous evangelical preacher, observed "miraculous recoveries," from friends who were once 'confirmed invalids', following a hydropathic regime (Sklar, 1984). These miraculous recoveries are quite conceivable at first glance after reading the documented cases. It is important to note, however, that hydropathic regimes occurred in "resort like" settings (Cayleff, 1987; Donegan, 1986; Sklar, 1984), and that the patients and hydropathists may have wanted to believe that this innovative therapy would have miraculous effects on all kinds of ailments. Perhaps then the 'craze' surrounding water-cure and the chance to 'get away from it all' had a significant influence on the miraculous recoveries.

Mary S. Gove, a leading hydropathist of the 1840s who established a successful water-cure practice in New York, claimed that "all curable diseases can be cured by water" (Gove, cited in Woloch, 1992). In the following excerpt, Gove provides an explanation for why cold water is recommended as an effective 'cure-all'. In this instance it was used following a hot bath:

> Let no one fear taking cold by using cold water over the entire surface on

> coming out of the vapor bath; it is the one sure preventive, and no one should use the vapor bath without the cold bath after it. Persons who have strength and courage to cleanse the system wholly with cold water, will find it greatly better to do so, though they may perhaps be a longer time in obtaining their object.... A lady can sew or read in the sitz bath, and thus lose no time. (Gove, 1846, p. 249)

Water was used on a regular basis for healing, outside of these 'resort like' establishments, in people's homes. The following excerpt is from a book that was for 'every wife and mother' during the late nineteenth century:

> Warm baths are useful for convulsions, pains in the bowels, restlessness from teething, and flatulence. The warm bath acts as a fomentation to the stomach and bowels, and gives ease where the usual remedies do not rapidly relieve. (Saur, 1889, p. 467)

Although cold water was reportedly the common hydropathic practice of the time (Sklar, 1984), this woman physician recommended the use of warm water. Two possible explanations for this occurrence may be: 1) not all patients could afford to stay at these exclusive hydropathy establishments where cold water-cure was practiced, and 2) taking a 'warm' bath may have been easier and more practical for wives and mothers to administer to their husband, or to a child that is restless from teething discomforts, than a cold bath regime since warm water would be agreeable and the family member would more likely comply to the regime.

Hydropathy: Early Twentieth Century

Taking a bath for healing was held in high regard during the early twentieth century: "This simple contrivance is one of (the) most powerful remedial means, that by which some of his highest triumphs are achieved" (Lovering, 1905, p. 911).

Both warm baths and cold baths were taken to cure ailments in the early twentieth century. Warm baths, the "half" or "hip bath", were commonly used to treat the following conditions: 1) fever and inflammation of every kind, 2) as a revulsive to draw blood to the 'nobler' organs, 3) resuscitation from shock, sun-stroke, 'drunkenness', delirium tremens, and 4) weak constitutions (Lovering, 1905; Rossiter, 1913). Cold baths were taken when a "plunge bath" was advised.

In the early twentieth century, plunge baths were taken primarily for preventative health reasons, and not when one was already weakened by an illness or disease. Plunge baths were taken for: a matter of luxury, religious observance, purification, and for prevention and cure of disease. Plunge baths occurred in the sea, river, lakes, and pools (Lovering, 1905). To Lovering (1905), plunge baths represented a treatment that the world was not yet ready to accept as truly efficacious in its own right, but rather a miraculous, mysterious treatment:

> So efficacious, indeed, has this simple means proved in healing the sick, that not a little superstition has been mingled with it. Springs and wells have often been supposed to possess some mysterious power, and for that reason has been named after some patron saint. In this respect, the world has loved mystery and marvellousness rather than the pure and simple truth. (p. 911)

This evidence suggests that the healing power of water has been promoted consistently since the early nineteenth century. Hot and cold water were both claimed as remedies for a variety of conditions. However, warmth and its effects on relaxation and pain relief appear to be a consistent theme. In the following discussion ways in which water was used to facilitate women in labour, and in some cases birth, from ancient times

until the mid-late twentieth century will be examined.

Water for Childbirth

According to Harper (1994), there are legends that the ancient Egyptians selected the babies of priests and priestesses to be born under water. The ancient Minoans, from the island of Crete, used a sacred temple for underwater births. Today, there are Hawaiians who maintain that certain families, from each of the islands, have been born under water for thousands of generations. However, the first recorded under water birth was not until 1805.

Early Nineteenth Century

In 1805, a French physician by the name of Embry, was summoned to care for a woman in labour. After 48 hours, the exhausted woman climbed into a hot tub to relax, and gave birth to her baby soon afterwards in the water. Apparently the physician, who had slipped out of the room, was equally surprised when he returned (Embry, cited in Odent, 1983; Church, 1989).

One woman reportedly soaked in a hot sitz bath to help her cope with labour. While in labour, she did not require any medicine until she left the bath:

> While in the bath she did not require medicines. After a few days she became fatigued and relinquished the bath altogether. Once out of the water, she tried mild turpentines in small doses; and, she still suffering considerable pain, opiates were given and repeated as the case required. (Denman, 1807, p. 413)

From these two reported cases it is evident that the relationship between relaxation, labour and water was recognized early in the nineteenth century.

Mid to Late Nineteenth Century

During the 1840s, both plunge baths and sitz baths were employed for women in labour with 'good' results as Mary Gove writes:

> The consequence has been, that the duration of labours under my care has been from 20 minutes to 41/2 hours. With one exception I have had no labour over 41/2 hours. Ladies who have had long and severe labours before they came under water treatment, have had their time of suffering reduced from 48 hours to one hour, and in several instances the time of labour has been reduced to a few minutes. (Gove, cited in Cayleff, 1987).

Hydropathists, of the mid to late nineteenth century, reduced womens' labour pains by introducing them into a warm bath (Sklar, 1974). At this time and also before this time, women greatly feared childbirth and often made plans for their own death (Donegan, 1986; Leavitt & Walton, 1981). It is possible that one goal was to reduce women's fears and anxiety about childbirth and this was achieved through a hydropathic regime.

In 1889, a woman physician, who was known as 'Mrs. Alice Stockham, MD', evidently used warm water baths regularly for her patients in labour since her patients laboured much more comfortably and effectively when a bath was employed: "The pains entirely or partially subside, and she (labouring woman) seldom fails to fall into a refreshing sleep. Local relaxation will be accomplished, the pains assume an effective character, and a speedy termination of the case can be expected" (Stockham, p. 184).

Apart from the waterbirth incidence of 1805, these accounts were from the experiences of women physicians. This finding could be coincidental; however, it could be possible that women practitioners were more sympathetic or possibly more

intuitively aware of the needs of their patients. Before the nineteenth century, consider how greatly water facilitated a woman's labour and childbirth experience in the following documented account of water facilitating labour:

> Mrs. N. engaged my services for her seventh confinement, stating that I might expect a tedious case, as in all previous labours the skill of physicians had been baffled. She had lingered in labour from 48 to 96 hours, attended with convulsions and other distressing symptoms; several times had been delivered with instruments. Summons came for me on a bright June morning at 5 o'clock. She had had irregular pains all night, was very nervous and had great dread of her sufferings, having no hope of relief for at least two days. I found no dilatation, and pains seemed to be only false pains.
>
> I gave her remedies, hoping to arrest the suffering until relaxation could be produced, and left her. At 10 o'clock I returned, armed with one of Dickens' novels, for a two days' pastime. Found the pains increased in severity, attended with rigidity of os, still no dilatation, but pressure of the uterus upward. Although a woman of great self-control, she could not repress the most piercing screams with each pain. A hot sitz-bath was administered, increasing the temperature until most copious perspirations was induced, after which, enveloping her in blankets, I bade her sleep, while I sat down to Dickens.
>
> She obeyed orders, slept soundly, having contractions every 15 minutes, when she would rouse and exclaim, 'What relief! Heaven can surely be no sweeter than this rest! What a blissful change!' I would say, 'Don't talk, don't bear down, sleep all you can,' and still read Dickens. About 1 o'clock expulsive pains came on. Examination revealed full dilatation of cervix, and head advancing. At 3:30 pm the child was born, no spasms, no instruments, and no medicine had been required. This is only one of many that I have seen relieved in the same way, and always find the bath effectual where there is no deformity of the pelvis. I am confident that this hot bath, if generally used, would save thousands of instrumental deliveries.
>
> Mrs. N. was a very grateful patient, and believes that the same means would have given relief in former labours, as the first symptoms were the same. The only unpleasant sequel in the case was, the novel remained unfinished. (Stockham, 1889, p. 184-186)

Twentieth Century

Igor Tjarkovsky, a Soviet researcher and swimming instructor, was the

first person to introduce the notion of having a waterbirth as we know it today. Tjarkovsky, like the mid to late eighteenth century practitioners, advocates the use of cold water treatments for women. Many midwives follow Tjarkovsky's method, to facilitate childbirth through the use of water, which includes giving birth in the sea (Balaskas & Gordon, 1992; Church, 1989; Daniels, 1989). Tjarkovsky first became interested in human birth under water after his premature daughter was born. Although Tjarkovsky was told that she would likely not survive, he "created a water environment for her as a replacement for the womb... and [she] spent a great deal of her infancy accompanying her father to the pool...and she developed quickly compared to her peers" (Balaskas & Gordon, 1992, p. 14).

In the late 1960s Frederick Leboyer, a French pediatrician, introduced the idea of slowly immersing the newborn in a warm bath immediately following birth. He wanted to make the newborn's transition from the womb into the world as gentle and easy as possible (Leboyer, 1975).

Michel Odent, a French obstetrician, was the first to introduce waterbirths, as it is known today, in the Western world. In the 1970s, Odent introduced a water pool into the maternity unit at Pithiviers, France. Initially, Odent wanted to help women cope with their labours without intervention through water immersion. He soon discovered that many women not only laboured but also gave birth in water because they progressed quickly or did not want to leave the water. In particular he notes that water is effective for painful or very long labours (Odent, 1983).

There are myths that suggest that women have been labouring and giving birth in water for centuries. Although in Canada, at present, waterbirth is considered an innovative alternative for parturients, there is evidence that water has been used in labour since the early part of the nineteenth century. However, planned birth underwater appears to be a recent innovation as a means of enhancing the birthing process.

The Concept of Waterbirth

Today, the general notion of a waterbirth conjures up a variety of emotions and meanings for health practitioners, consumers, and society as a whole. To better understand the meaning of having a waterbirth for a woman in labour, a review of the current descriptive, theoretical, and empirical literature was conducted. In the following discussion an attempt will be made to define the term 'waterbirth', based on the analysis of the writing by the waterbirth experts. Following this, the universal characteristics that are associated with the term 'waterbirth' that these authors seem to universally hold in agreement will be identified.

Defining 'Waterbirth'

There appears to be two schools of thought regarding the definition of a waterbirth. First, 'waterbirth' means to labour *and or* give birth in water; and second, 'waterbirth' means to both labour *and* give birth in water. Although a single definition of waterbirth has not been established, what is important is how the pregnant woman defines what a waterbirth means to her and then conveys this understanding to her primary caregiver.

The First International Conference on Waterbirth was held in London, on the first weekend in April 1995. This conference brought together the world's experts on waterbirth. At this conference, discussions of *waterbirth* included both women who laboured only in water, and women who laboured and then gave birth under water (Garland, 1995). Interestingly, a distinction was not made between the two groups of women by the leading experts. This could be an important fact, for those women who did not give birth in water, because such a distinction could be upsetting for women who were not considered to have had a 'real' waterbirth because they 'got out' for birth. The following experts use the first definition of waterbirth: women who labour, but do not necessarily give birth in water, Janet Balaskas, Yehudi Gordon, Michel Odent, Lesley Page, Caroline Flint, Marsden Wagner, Roger Lichy, Eileen Hertzberg (Garland, 1995).

Experts such as Harper (1994), McCandlish and Renfrew (1993), Rosenthal (1991), and Tjarkovsky (Daniels, 1989) utilize the second definition of waterbirth: women who labour and give birth in water. Although Harper (1994) and Tjarkovsky use the term 'waterbirth', Rosenthal (1991), McCandlish and Renfrew (1993) use the term *warm water immersion* during labour and birth. In their writings, both terms mean the same, but using the term *warm water immersion* instead of *waterbirth* may be 'less risky' given the relatively recent news media about the five babies that died following 'waterbirths' (Attwood & Lewis, 1994). Perhaps this is why Attwood and Lewis (1994) argue that the present terminology 'waterbirth' is misleading and "should be only used to describe a baby actually born under water, not to describe women who use

water in labour" (p. 72).

Universal Understanding About Waterbirth

Certain characteristics are universally associated with the term 'waterbirth'. These are *relaxation* and *comfort* associated with non-pharmacological pain relief, a shorter duration of labour, less perineal trauma, and few interventions. These latter factors will be considered later from a physiological standpoint.

Descriptive Literature. According to the descriptive literature, waterbirth is *relaxing* and *comforting* (Attwood & Lewis, 1994; Brown, 1982; Burns & Greenish, 1993; Church, 1989; Daniels, 1989; Harper, 1994; Jepson, 1989; Lichy & Herzberg, 1993; Moysa, 1995; Nightingale, cited in Garland, 1995, p. 181; Odent, 1994). Although the discussions put forth by Brown (1982), Daniels (1989), Harper (1994), Moysa (1995), and Nightingale (1995) are intriguing, they are problematic as their conclusions are based upon unsubstantiated findings. First, Brown (1982) presents her conclusion that water is relaxing and comforting for women, on the basis of one article by Odent in 1981. Second, Attwood and Lewis (1994), Burns and Greenish (1993), Daniels (1989), Harper (1994), and Jepson (1989) do not even indicate the source of their conclusions and imply that relaxation and comfort is an expected outcome for all women who have a waterbirth. For instance, their experience with the number of waterbirths they attended is not provided. In addition, their claims seem to be based solely on the primary caregiver's observations

since the experiences of the women they attended were not given. Third, although Moysa's (1995) discussion is the most convincing, her conclusions are based upon the experiences of four women who birthed at home. Only two of the women had a previous homebirth experience. It would seem that using water for labour and birth made the difference for these two women. However, for the other two women whose previous births were in hospital, it is difficult to say whether water or having a homebirth made the difference. Fourth, while Nightingale (1995) based her comments on a sample size of 400 women, the source of the data was not clear. The criteria used to determine the degree of relaxation are not known. Did the women appear relaxed to an observer or did the women report that they felt more relaxed in the water? Is the external caregiver's observation of 'relaxed' the same or different from the women's perception of relaxed?

On the other hand, Odent (1994) and Lichy and Herzberg's (1993) conclusions are less problematic. While they concluded that women were more relaxed in water they also provided evidence of relaxation and comfort through the use of pictures that illustrated women's facial expressions in different stages of childbirth while immersed in water. In addition, they occasionally included women's descriptions of their experience in their discussion.

Although Church (1989) based her observations on a large sample size of 1, 314 women who birthed in water, problems were inherent in her report of the findings. First, Church did not take into account the possibility of there being a difference in the relaxation and comfort that was achieved between women who laboured in water and women who laboured out of water. Only the women that used water were

reported. Second, the reactions of primigravidas and multigravidas were not differentiated. If there were more multigravidas in this sample, then they may have experienced their birth as more relaxing and comforting simply because it was not their first time. Factors such as fear that affect women's relaxation and comfort level may not be as significant a consideration compared to primigravidas. Third, Church's conclusions, that women seemed more relaxed and comfortable, appear to reflect her own observations, but she failed to include any data that reflected the perceptions of the women in the study.

Given the information in the descriptive literature, women who experience waterbirth have a more relaxing and comfortable labour experience compared to women who do not use water for birthing. However, there are still unanswered questions. Is it not possible to have a relaxing and comfortable birth experience out of water? Why do these authors imply that a waterbirth experience is more relaxing and comforting than a labour and birth experience out of water? What is it about the properties of water that seem to make a difference for women who choose to have a waterbirth? In addition, some women may not be well suited or drawn to have a waterbirth, but may feel pressure to try this 'innovative birth option' given all the publicity on its relaxing and comforting properties. Therefore, research is needed to determine precisely what it is about the properties of water that make a difference, and which women are more inclined to do well with a waterbirth experience.

Theoretical Literature. Balaskas and Gordon (1992), Odent (1983), and

Rosenthal (1991) propose some physiological reasons in an effort to explain why women experience relaxation and comfort from warm water immersion. First, these women project an 'altered' mental status upon entering the water that may be the result of enhanced endorphin production. Second, once women enter the bath their anxiety level visibly reduces lowering the catecholamine levels (Odent, 1983; Rosenthal, 1991). Third, women's nerve endings in their skin respond to the warm water that touches their whole body; this in turn releases pleasant sensations from the periphery to the spinal column to the 'gate' in the brain, as proposed by Melzack and Wall (1965), which inhibit painful impulses from being interpreted as painful (Balaskas & Gordon, 1992; Odent, 1983). Fourth, women experience 'a reduction of the effects of gravity' (Odent, 1983). These hypotheses may explain why women who waterbirth might expect to experience greater relaxation and less pain as noted in the historical observations of women undergoing warm water immersion.

Empirical Literature. In one study, the researchers claim that waterbirth is *relaxing* and *comforting* for women in labour (Lenstrup et al., 1987). Lenstrup et al. conducted a quasi-experimental study of 160 women (88 bath group, 72 control group). Using post hoc statistical analysis, no differences were identified between the treatment (water) and control groups on the variables, maternal age, parity, membrane status, and cervical dilatation.

Lenstrup et al. (1987) also concluded that warm water immersion may provide some pain relief. The problem with this finding is that there was no information given as

to how pain ratings were evaluated. The researchers speak of 'pain scores' so the reader might assume that some form of a scale was used in their assessment, but it is not described nor do the authors reveal who assessed pain, observer or the woman in labour. The method of data collection could have had a significant affect on the overall results. For instance, the woman may appear to be having a great deal of pain to the external observer, but to the woman her pain is quite manageable because she feels in control.

Only one study (Lenstrup et al., 1987) was experimental in nature and the method and instruments used are inadequately described. While the descriptive literature suggests women have relaxed and comfortable childbirth experiences, these reports are made by the observers and not by the women themselves. There was no literature/ research identified suggesting that women themselves had been asked what the experiences of being immersed in water during labour was like for them. Research into waterbirth is in its infancy and a study of the event, from the perspective of the woman undergoing the experience, would appear to be justified.

Birthing Tub/ Pool Considerations

An important factor that seems to affect how much relaxation and comfort a woman can achieve while immersed in water is the type of birthing tub/ pool that is used for waterbirth. Two criteria of a tub/ pool were identified in the literature. These were the size of the pool and the temperature of the water. There is also reference to a related safety factor, the cleaning protocol of the pool following a birth; however, this will not be addressed in this literature review. Only the size of tub and water temperature will be

included as these may influence the participant's reaction to waterbirth.

Size of Birthing Tub/ Pool

Research to date suggests that the size of the birthing tub or pool is an important factor to consider when offering the option of a waterbirth to women (Jepson, 1989; Lichy & Herzberg, 1993; Rosenthal, 1991). Generally, a large birthing tub or pool is considered most appropriate, but the term "large" is not defined. Although Lichy and Herzberg (1993) agree that a "large" birthing pool is best, they are quick to point out that 'bigger' does not necessarily mean 'better'; it depends on the type of birthing pool. For instance, Lichy and Herzberg would advise a standard bathtub over a jacuzzi style bathtub because a women cannot be supported by the curved sides of a jacuzzi, whereas, in a tub she could sit sideways (crosslegged) and have the straight side to use as a support for her back. Also, Lichy and Herzberg find it more sanitary to use a tub instead of a jacuzzi because it is difficult to clean out all the hoses thoroughly following a waterbirth.

Jepson (1989) concurs with Lichy and Herzberg: "Few women have access to specially designed pools, but an ordinary bathtub ... in which a woman can crouch, kneel, or sit is just as valuable" (p. 74). Although Jepson is correct to point out that few women have access to a specially designed birthing pool, her conclusion about the size of the tub or pool seems unsubstantiated. Jepson does not include the sources of information on which this statement is based.

Rosenthal (1991) presents an opposing view to that of Lichy and Herzberg (1993) and Jepson (1989). Rosenthal finds that a solid jacuzzi-type tub is best for women who

want a waterbirth because they can find comfortable positions more easily with the extra room for freedom of movement. Others would concur with Rosenthal's comment that a larger tub rather than a standard bathtub affords the woman an easier time in finding comfortable positions during labour (Balaskas & Gordon, 1992; Church, 1989; Daniels, 1989; Lichy & Herzberg, 1993). Rosenthal's conclusions are based upon his experience with women who have had a waterbirth at the Family Birthing Centre between 1985 - 1991. Since the findings are inconclusive, more research is needed to determine what kind of birthing tub/ pool women find most comfortable to use for a waterbirth.

Temperature of the Water

There has been no examination of the relationship between water temperature and fetal outcome specifically. However, there are authors who feel that the water temperature does affect fetal outcome at birth. The recommended water temperatures range between 32 to 38 degrees centigrade. Rosenthal (1991) states that their protocol requires water temperature to range between 32 to 37 degrees. Attwood and Lewis (1994) recommend water temperature between 36 to 37 degrees. Jepson argues that the water temperature "must be maintained as near 37 to 38 degrees as possible" (1989, p. 74). Lichy and Herzberg (1993) suggest a temperature between 35.8 to 38 degrees centigrade depending on which temperature the woman feels most comfortable. However, it is Rosevear, Fox, Marlow, and Stirrat's contention that more research is needed to determine which temperature range is considered safe since "theoretically, this could critically compromise the susceptible fetus" (1993, p. 1049). This conclusion is not substantiated as their

comment is based on two case studies where the mothers used water in labour. In one case the temperature of the water was 39.7 degrees centigrade. No further information is available. The authors are correct in suggesting that more research is needed as there is a dearth of information regarding this problem of water temperature. However, this problem will not be addressed in this study. The focus will be on the mother's perception of the effect of the warm water, without concern for the exact temperature.

Waterbirths from a Physiological Standpoint

Research to date suggests that women benefit physiologically from waterbirths. The benefits that have been cited as outcomes of labouring in water are *non-pharmacological pain relief* (Attwood & Lewis, 1994; Balaskas & Gordon, 1992; Brown, 1982; Burke & Kilfoyle, 1995; Burns & Greenish, 1993; Church, 1989; Kamayani, 1989; Lenstrup et al., 1987; Lichy & Herzberg, 1993; Rosenthal, 1991), a *shorter duration of labour* (Brown, 1982; Daniels, 1989; Jackson, Corsaro, Niles, Stange, & Haber, 1989; Odent, 1983), *less perineal trauma* (Burke & Kilfoyle, 1995; Rosenthal, 1991), and that the women have more *energy* (Balaskas & Gordon, 1992; Brown, 1982; Kitzinger, 1978; Rosenthal, 1991).

Non-Pharmacological Pain Relief

Descriptive Literature. Women who have waterbirths seem to experience less pain compared to women who labour without water (Attwood & Lewis, 1994; Brown, 1982; Burns & Greenish, 1993; Church, 1989; Kamayani, 1989). Attwood and Lewis

present their conclusion that water is an effective non-pharmacological analgesic for women, on the basis of one article written by Burns and Greenish in 1993. Brown based her conclusions on one source that described 'touching' and dated back to 1978. While Brown talked of birth in water, the account does not focus on whether or not women who have a waterbirth experience pain relief from the water. Kamayani's report was also based on unsubstantiated conclusions. Her data on pain relief in labour was a report of one interview with an obstetrician from Belgium who had attended just over 400 waterbirths. One needs to consider bias when all data in this report appear to come from the primary caregiver with no input from the women who had experienced the waterbirths.

Although Burns and Greenish (1993) and Church (1989) based their observations on a sample size of 300 women and 1, 314 women respectively, problems are apparent in their report of the findings. No comparison was made between the level of pain experienced by women who laboured in water and women who laboured out of water. For instance, only the data on women that used water were reported. Second, the reactions of primigravidas and multigravidas were not clearly differentiated. Burns and Greenish made the comment that they were "particularly impressed by the primigravidae" (p. 49), but they did not explain why they were impressed. For example, a factor such as fear of the unknown could significantly affect the primigravidas' perception of pain relief from water. Were the primigravidas not fearful about the level of pain they would experience, and is this why Burns and Greenish were impressed? Fear was a consideration that was not taken into account by Church either. Factors such as fear that affect women's perception of pain relief would not likely be as significant to the multigravidas compared to the

primigravidas. Third, Burns and Greenish and Church's conclusions seemed to reflect their own observations, but failed to report any perceptions that were from the women in the study.

Theoretical Literature. There is descriptive literature in which it is suggested that women who labour in water experience a decreased perception of pain (Balaskas & Gordon, 1992; Rosenthal, 1991). Balaskas and Gordon's reports are based upon nine years of experience with women having waterbirths, and Rosenthal has six years of experience working with women who have had waterbirths.

Empirical Literature. Research findings to date suggest that women who have waterbirths experience pain relief from the water (Burke & Kilfoyle, 1995; Lenstrup et al., 1987). Burke and Kilfoyle conducted a retrospective survey. They used a comparative design on 200 randomly selected cases. Half of the case studies were selected because the women had had a 'waterbirth' and the other half had had a 'bedbirth'. To assess the variable 'pain relief', the researchers examined the type of analgesia used in labour. They found that 89% of the women in the waterbirth group used Entonox and 11% had nothing. However, 100% of the women in the waterbirth group were satisfied with the amount of pain relief achieved in labour. Whereas, 41% of the women in the bedbirth group were given pethidine, 45% used Entonox, and 7% received no analgesia. Of the women in the bedbirth group, 19% reported that they were not satisfied with the pain relief achieved. As a result, the researchers concluded that the women in the waterbirth group experienced more pain relief compared to the women in the

bedbirth group. The study seemed methodologically sound with the conclusions adequately supported. In addition, the researchers assessed pain relief from water from the perspectives of four women. These four women seemed to have volunteered "comments" while filling out the survey sent to the women whose charts had been selected. The researchers reported that the women found that using water in childbirth was "like heaven", "wonderful", "fantastic", and "drained tension" (Burke & Kilfoyle, 1995, p. 6). One women in particular commented that the water was like a 'painkiller': "I was worried about needing painkillers, but this was not a problem as I found the water very calming" (p. 6). Although Burke and Kilfoyle attempted to address pain relief from water from the women's perspective, more research is needed to determine if, in fact, women do perceive a sense of pain relief from the water.

Lenstrup et al. (1987) conducted a controlled study of 160 women. Eighty-eight of the women were assigned to the 'bath group', and 72 were assigned to the 'control group'. Using a post hoc statistical analysis, no differences were identified between the two groups on the variables, maternal age, parity, membrane status, and cervical dilatation. The women's perceptions of pain level were tested using a 100 mm long line, where the left end represented 'no pain' and the right end represented 'unbearable pain'. Once the women in both groups had reached a cervical dilatation of 5 cm, the researchers could begin to record the measurements for the study. The women in the bath group were tested at the start of the study, after 30 minutes, and 30 minutes after the bath. The control group were tested at the start of the study and then two hours after

the first measurement. The maximum stay in the warm water for women in the bath group was two hours. Lenstrup et al. reported a mean score in the bath group of 64 points, and 50 points in the control group at the start of the study. During labour, the bath group reported a pain level of 56.8 points (-7.2), and the control group reported a pain level of 58.5 points (+8.5). Therefore a difference of 15.7 points amounted between the two groups. However, after Lenstrup et al. (1987) conducted statistical evaluations using the chi-square test, Fisher's exact test, and Wilcoxon's two-sample test at an alpha level of <0.05, they found that there was no significant difference in the amount of pain relief achieved between the two groups. However, they did claim that "the bath group experienced pain relief whilst bathing, which was not seen in the control group.... During the following 90 minutes, the women in the bath group experienced the same increase in pain as did those in the control group" (p. 711). They concluded that the bath group experienced slight pain relief from the water, but this could be affected by the fact that they reported significantly higher pain scores, compared to the control group, before entering the bath. Although Lenstrup et al. (1987) assessed pain relief from water from the women's perspective, more research is needed to determine if in fact women do perceive a sense of pain relief from using water in labour.

Shorter Duration of Labour

Descriptive Literature. Women's labours are reported to progress rapidly once they enter water (Brown, 1982; Daniels, 1989; Jackson, Corsaro, Niles, Stange, & Haber, 1989; Odent, 1983). However, the descriptive literature in this area is

generally inadequate. Brown's conclusions on shorter labour were based solely upon one article of Odent's (1981), and Daniels study was based on interviews with 'waterbirth mothers' but did not include empirical data on actual length of labour. Although interviewing 'waterbirth mothers' is a step in the right direction, Daniels findings would have been more substantial if additional information on the actual length of labour was provided. She did not report on the number of women interviewed, the timing of interviews in relation to labour or whether or not the labours were actually short, or only perceived by the mothers as being short. In addition, no comparison was made between the length of labour of waterbirth mothers and a control group.

Jackson, Corsaro, Niles, Stange, and Haber (1989) claim that women who have waterbirths experience shorter labours. However, problems were inherent in their report of their observations. First, they based some of their conclusions on findings from 'impressive' statistics; however, they failed to mention what measures were used to obtain these statistics and how many women were considered overall. Second, their remarks were based solely on their own observations, with no input from the women who had experienced the waterbirths. One needs to question bias when all data in this report appear to come from the primary caregivers. Third, Jackson et al. did not take into account the possibility of there being a difference in the length of labour for women who laboured in water and women who laboured out of water. Only the women that used water were reported. Fourth, no comparison between primigravidas and multigravidas on their length of labours were considered. If most of the women

having waterbirths were multigravidas, then findings about the length of labour would be significantly affected by this factor.

Theoretical Literature. Odent (1983) suggests that warm water in labour seems to facilitate first stage of labour because of "the direct muscular stretching action and peripheral vascular action" (p. 1476). However, Odent does not appear to have conducted research, rather he uses his 25 years of experience with women who have had waterbirths to base his conclusions. It would be interesting to discover if women who labour in water perceive the experience to be shorter or longer than it actually is.

If women perceive that their labours seemed 'shorter' than they actually were, then perhaps women who have waterbirths are able to reserve more energy for the birth itself. However, Church (1989), Jepson (1989), and M. Renfrew (personal communication, October 7, 1995) would argue that women who labour in water may experience longer labours if they enter the water too early. To these researchers, too early is if the woman's cervix is not 5 cm dilated prior to entering the pool.

Empirical Literature. Burke and Kilfoyle (1995) suggest that women do experience shorter labours when they have a waterbirth. Burke and Kilfoyle conducted a retrospective, randomly selected case study, comparing women who had waterbirths with women who had bedbirths. Length of labour was one of the variables that was examined. They concluded from their study of 200 women (100 waterbirth group, 100 control group) that, "women who were delivered in the pool did not have shorter labours than bedbirth women" (p. 7). However, there was a higher incidence of

artificial rupture of membranes (ARM) in the bedbirth group which must be taken into consideration. For the multiparous participants, 42% of the bedbirth group had an ARM, compared to 17% of the waterbirth group. For the primiparous participants, 31% of the bedbirth group had an ARM, compared to 23% of the waterbirth group. There is little empirical evidence to support that labouring in water results in shorter labour, but it is possible that women perceive their labours to be shorter, which could potentially leave them with more energy to give birth. It is evident that more research needs to be completed in this area.

Less Perineal Trauma

Burke and Kilfoyle (1995) found that the "overall incidence of perineal trauma was higher in the bedbirth group for both primiparous and multiparous women. There were more intact perineums in both primiparous and multiparous women in the waterbirth group" (p. 4). Episiotomies were not reported seperately from other forms of trauma. These findings seem substantiated since they were based on a large, randomly selected, matched sample that was controlled.

Rosenthal (1991) reported specifically on episiotomy rates. Of the nearly 1,400 women who had waterbirths at the Family Birthing Centre between 1985 and 1991, the episiotomy rate was between 5% to 10%. This is compared to an episiotomy rate of 40.3% in one local maternity hospital in 1994 in the city in which this research was conducted, (L. Breitkreuz, personal communication, February 27, 1995), 54% from a Canadian multicentered trial (Klein et al., 1993), 65% from an American study

(Thacker & Banta, 1983), and a total of 82.6% from a randomized controlled trial that compared selective and routine use of mediolateral episiotomy for 2606 women in 8 public maternity units in Argentina (Anonymous, 1994, p. 486). Burns and Greenish (1993), in their evaluation of over 300 waterbirths, found that "perineal tears (occurred) more frequently in those women delivering in the pool" (p. 49) than did episiotomies.

Schorn, McAllister, and Blanco (1993) conducted a prospective, randomized, and controlled study on 93 pregnant women. They concluded that "water immersion did not alter the rate of cervical dilation, change the contraction pattern, change the length of labour, or alter the use of analgesia" (p. 336). These findings were based on a small sample of 93 pregnant women. In addition, both the water immersion group and the control group were given analgesics upon request for pain relief which may have influenced their findings. The participants in the warm water immersion group were able to enter the water at any time. If a participant entered the pool before her cervix was 5 cm dilated, then her progression of labour was observed to be inhibited.

Energy

There is some literature that suggests that women labouring in water are able to conserve energy, which is needed at the time of birth when women are generally exhausted. Kitzinger (1978) suggests, based on her experience, that warm water immersion tends to refresh the women. Moreover, Rosenthal (1991) comments: "In the late first stage of labour, warm water immersion provides the mother with an opportunity to rest and seems to help her rally for the exertion of giving birth" (p. 48).

Balaskas and Gordon (1992) provide a possible theoretical explanation for these experiential findings: "Immersion in water will reduce your fluid requirements because it is slowly absorbed through your skin. Maintaining the correct water temperature will prevent overheating, dehydration and loss of energy" (p. 92).

Newborn Outcomes

Research to date suggests that the newborns of women who had a waterbirth are happier, more alert, and relaxed compared to the newborns of women who did not use water in labour (Balaskas & Gordon, 1992; Jackson, Corsaro, Niles, Stange, & Haber, 1989; Limburg & Smulders, 1992). Balaskas and Gordon's conclusions are based on their nine years of experience of working with families who had a 'waterbaby'. Limburg and Smulders findings are based on interviews and pictures from seven women who had waterbirths in Holland:

> Jody was fully awake all that time. She looked around with bright eyes and sucked her mother's breast firmly. It must be delightful for the baby to come from a warm spot and go into another and to be totally free to move, not confined by towels or clothes. (Limburg & Smulders, interview with Agaath, p. 47)

> Some people claim that babies start laughing only after they are six weeks old, but Roland smiled from the beginning... the moment he enjoyed his first drops of milk and, later, during and after his meals. He still does today. (Limburg & Smulders, interview with Pamela, p. 62)

Jackson, Corsaro, Niles, Stange, and Haber (1989) suggest, based on their statistics, that 'waterbabies' were more alert, responsive, and relaxed. However, they failed to mention what measures were used to obtain these 'statistics' and how many newborns were considered overall, and if their findings included comparisons with newborns

whose mothers did not have a waterbirth.

There is debate over whether newborns should be raised out of the water at birth slowly or quickly. Tjarkovsky advocates that newborns should slowly emerge from the water following birth (cited in Sidenbladh, 1983; cited in Stanley, 1995). However, Tjarkovsky does not provide a rationale for why this should be the case. On the other hand, Odent (1983) and Rosenthal (1991) argue that only rapid emergence should be considered. Their rationale for advocating quick emergence is based on many years of experience. For instance, Odent confirms, based on his experience, "that the newborn's first breathing is triggered by contact with the air and the sudden difference in temperature" (p. 1476). Rosenthal concurs with Odent. Therefore, since there is no empirical research that concludes that there is a benefit to leaving the newborn in water, newborns should be lifted from the water immediately following birth in order to minimize the chance of harm. To conclude, while research has been done on the physiological outcomes of waterbirth, little research has been done on the psychological impact of labouring in water.

Waterbirth from a Psychological Perspective

Claims have been made that waterbirth results in a more relaxing and enjoyable childbirth experience. The psychological effects of waterbirth are discussed in terms of how the physiological changes during a waterbirth affect the psychological outcomes in the labouring woman. The psychological outcomes were a reduction in mental tension, feeling 'weightless', and a more relaxing and enjoyable labour and birth

experience (Brown, 1982; Church, 1989; Daniels, 1989).

Descriptive Literature. Brown (1982) contends that women who use water in labour feel 'refreshed in mind and body',... (experience) psychological relaxation, and a generalized relief of mental tension" (p. 14). However, Brown's claim of how women experience waterbirth from a psychological perspective is based on her own observations, and not from the perspective of women who have experienced waterbirth. On the other hand, Daniels (1989) indicates that the source of her conclusions comes from interviews with mothers who have had waterbirths. Daniels implies that a gentle, relaxing and joyous birth experience is an expected outcome for all women who have a waterbirth. However, Daniels does not report the number of women interviewed, the timing of interviews in relation to labour, or how she conducted these interviews.

Theoretical Literature. Church (1989) contends that women who use water in labour benefit psychologically. Church suggests that water reduces anxiety, which "apparently reduces (the woman's) adrenalin levels, thus encouraging her natural oxytocins and endorphins to flow uninhibited" (p. 166). Church bases this claim on observations of 1, 314 women who used water in labour and or birth. However, Church's study examined the responses of women who had waterbirths based on external observations; she did not use either a comparison or control group, so there is no evidence to differentiate the experience of women with waterbirths from others who did not use water. Although these authors suggest that there are psychological benefits for women, no known empirical evidence exists. It is clear that further research in

this area is needed. No known research reported any negative psychological effects following a waterbirth.

Gaps in the Literature

In only one article was waterbirth reported from the woman's perspective. Since waterbirth is a relatively new concept in Canada, not all health practitioners or pregnant women will be aware of the benefits that the option of a waterbirth may have for women in labour. Therefore, it is critically important to study the experiences of women who have had waterbirths in Canada.

The overwhelming majority of research to date has been on the physiological aspects of waterbirth. In the available literature, the experiences of the women themselves have not generally been considered. To benefit prospective women in labour, it is important to provide them, as well as health practitioners, with information about waterbirth. In addition, information about women who are more inclined to do well with an option of a waterbirth is necessary. Having this information will facilitate the possibility that more women in the future will have a positive birth experience. To achieve this end information is needed about waterbirth from the emic perspective. Introducing waterbirth as an option will provide some women with the opportunity to recognize their own inner strength during childbirth while immersed in water which in itself is very healing.

Balaskas (cited in Reid, 1994) and McCandlish and Renfrew (1993) all note that future research should address waterbirth from the women's point of view.

Balaskas "rejects the validity of a controlled trial as ... it detracts from the idea of putting women's choice first. The best research that could be done, she says, would be an evaluation and comparison of women's experiences of waterbirth" (p. 28). However, this perspective raises some barriers to the need for controlled trials to demonstrate safety in terms of physiological variables. McCandlish and Renfrew add that from their review of previous research, carried out in the Midwifery Research Programme, warm water immersion was not adequately evaluated from the point of view of the mother.

As Alice Stockham (1889) once claimed: "To be well born is the right of every child" (after p. xiv). If waterbirth has positive psychological outcomes for the mother, then her child will undoubtedly be affected by these benefits. Therefore, additional research is needed to determine if waterbirth does facilitate positive, gentle, enjoyable birth experiences, and to assess if water should be offered as another alternative for women in labour.

It is evident that there are two schools of thought on the use of the term 'waterbirth'. Some authors have used it to describe labouring in water, while others believe it only applies when both labour and birth occur in water. For the purpose of this study, waterbirth is considered to have occurred if women either labour or labour and give birth in water. The literature supports that the critical factor for women may be labouring in water, while being born in water may have a marked influence on the continued well-being of the newborn.

This literature review leaves many questions unanswered. If

waterbirthing is a safe and effective way to experience childbirth (Brown, 1982; Church, 1989; Daniels, 1989), then how can waterbirths be incorporated into our present maternal and child health practices? Do women who choose to labour in water benefit psychologically from the experience? Are newborns whose mothers had a waterbirth any different compared to mothers who did not use water in labour and or birth (Balaskas & Gordon, 1992; Jackson, Corsaro, Niles, Stange, & Haber, 1989; Limburg & Smulders, 1992)? These questions, combined with the aforementioned gaps in the literature, resulted in the formulation of the research question for this study: How do women perceive their waterbirth experience?

III. METHOD

To best answer a research question about a phenomenon, significant criteria need to be addressed before choosing a method: What is the purpose of the study? What is the nature of the phenomena to be described? How much is already known about this? What question(s) need to be answered? What are the characteristics of the potential participants or setting? Moreover, the researcher's assumptions, interests, purpose, research knowledge and experience also influence the method that is chosen (Field & Morse, 1985; Morse & Field, 1995). In other words, "research is to see what everybody has seen and to think what nobody has thought" (Albert Szent-Gyorgy, cited in Morse & Field, 1995, p. 1). Frequently there is information in the world around us but the value is hidden without systematic research.

The purpose in this study was to generate a rich description of how women perceive their waterbirth experience. Given the nature of this phenomenon, a qualitative, exploratory, descriptive design using ethnographic methods was chosen for two reasons. First, no known empirical research existed on the psychological impact of labouring and or birthing in water. Second, only the woman who has experienced a waterbirth would be able to describe her perceptions of the experience.

Since little is presently known about the woman's experience of having a waterbirth, an emic perspective is needed to answer this and qualitative methods are most suitable for addressing the emic perspective (Field & Morse, 1985). The question that needs to be answered in this case is: How do women perceive their waterbirth

experience? To answer this question, ethnographic methods such as one-to-one personal interviews, fieldnotes, as well as a visual analogue scale (see Appendix A) and demographic data questionnaire (see Appendix B) were employed. Personal interviews served as the primary source of data collection and these are considered the "ethnographer's most important data gathering technique" (Fetterman, 1989, p. 47). Ethnographic interviews were appropriate since the potential participants were literate and well-informed; therefore, they could provide a thick description about their waterbirth experience. In addition, most of the waterbirth experiences occurred at home where all but one of the interviews took place.

The researcher's assumptions were: the women were considered the experts of their own experience, their perceptions were based on their personal experiences, and that the knowledge and information derived from the interviews would be holistic, relational, and contextual. The researcher's background knowledge and experience on conducting qualitative research is based on a small study that examined the lived experience of three women whose role of teaching childbirth education classes was removed to the private sector. This experience, together with the aforementioned criteria, information above, and one thesis supervisor's recommendation lead to a decision to explore waterbirths from the woman's perspective with an exploratory descriptive design using ethnographic methods.

In this chapter, the methods that were utilized throughout this investigation will be discussed. To begin, a description of the sample and methods used for data collection and analysis will be given. This will be followed by, the measures taken to

optimize methodological rigor, and ethical considerations that guided the researcher's conduct for this research.

The Sample

The kind of sample selected will ultimately affect the quality of the research. To ensure that a quality sample is selected for a research study, two principles must be considered -- *appropriateness* and *adequacy*. *Appropriateness* refers to participants who meet the 'informational needs' of the study and who are literate and willing to share their experience with the researcher. *Adequacy* means that a sufficient and quality sample was achieved to ensure 'representativeness' (Morse, 1991). In the following discussion, an explanation of how *appropriateness* and *adequacy* were achieved will be given with the methods used to access this quality sample fully explicated.

Appropriateness

Appropriateness was achieved by utilizing a non-probability, purposeful sample. This means that participants were selected based upon the needs of the study. More specifically, participants were selected if they 'fit' the purpose of the study which was determined by the research question: "How do women perceive their waterbirth experience?", and by the stage the research need reached. In addition, *snowball sampling*, where women nominate other women, was also used (Morse, 1991). Midwives nominated clients who they thought would be interested in the study. There were four midwives from the community who nominated potential participants after hearing about the study, through 'word-of-mouth' from other midwives or through the information letter. This

kind of sampling is particularly effective since the midwives know who would be the most knowledgeable, "and therefore, are the most qualified to recommend the person who (could) provide the most information and the best interview" (p. 130).

Given the present socio-political climate of the health care system, women who are interested in having a waterbirth often have a midwife as their primary caregiver, and arrange to labour and birth at home so that this option is possible. For this study, an attempt was made to involve women who had waterbirths in both the home and hospital setting, however, eight of the women in this study laboured and birthed at home. If more women who had waterbirths in hospital had been available, it would have been easier to assess if in fact 'water' alone made the difference. Fortunately, other characteristics made it helpful to determine if water made the difference. For instance, there were multiparous women who had previous home births without the use of water, and four of the participants were primiparous with no previous 'unsavory' hospital experience to compare with their 'joyous' home birth experience. One of the participants planned to labour initially at home in water and then to have a waterbirth in the hospital. Although an attempt was made for her to have the option of a waterbirth in hospital, this woman found that it was more suitable to be out of water since the size of the tub, in the hospital, did not meet her needs for relaxation and 'comfort'. Participants who had a typical waterbirth experience were interviewed first, followed by, participants who had experienced waterbirth but with an atypical experience, such as labour with the use of medication or a Cesarean section. There were three participants who eventually

needed to go to hospital because they needed medical attention. Of these three participants, one had an epidural and the other two had Cesarean sections. Obtaining the sample in this manner ensured that an adequate depth of information was assimilated to answer the research question *appropriately*.

Participants were included into the study if they met the following criteria: 1) had experienced a waterbirth, 2) were over 18 years of age or had experienced childbirth so that an additional consent from the parent or guardian was not required, 3) were able to speak and understand English in order to answer the researcher's questions accurately and to fill out the Perception of Birth Experience: Visual Analogue Scale appropriately (see Appendix A), 4) were able to reflect on experience and willing to share this experience with the researcher in an interview, and 5) were between two to twelve weeks postpartum. Next, the principle of *adequacy* will be discussed in relation to the sample obtained for this study.

Adequacy

A sample is considered *adequate* when sufficient and quality data have been assimilated; it is not assessed by the number of participants, but rather, the degree of relevance, completeness and amount of data obtained (Morse, 1991). To ensure that there were no 'thin' areas within the data, sampling occurred together with data collection and analysis until 'saturation' was achieved. Initially, it was proposed that eight to twelve participants would provide an *adequate* amount of quality data to answer the research question. In the end, a total of eleven participants were interviewed. All of the

participants had a midwife as their primary caregiver; however, three of the women who birthed in hospital were also under the care of the obstetrical staff in the chosen hospital. Although eight to twelve participants were proposed for this study, it was difficult to assess the precise sample size for two reasons: *attrition* and *saturation*.

Attrition. There were two potential participants who decided not to be part of the study. After responding to the information letter (see Appendix C) that was provided, these two women called for more information and left a message on the researcher's answering machine. The researcher promptly returned the call only to receive an answering machine reply at the potential participant's house. A message was left with an invitation to call back for more information if still interested. Neither one of the two potential participants returned the call. In this case, it was perhaps more of a recruitment problem than 'attrition'.

Saturation. Originally, the primary participants were going to be interviewed twice with the remaining secondary participants being interviewed once to validate the findings. In the end, ten participants provided audio-taped interviews, and one of the participants was interviewed over the phone. After interviewing the eleven participants, no new information was being identified. Data collection was then terminated. The data were considered *saturated* because no new information or themes were discovered while analyzing the transcribed interviews (Field & Morse, 1985). However, it was recognized that the limitation of sample size may have precluded the identification of other experiences that went beyond the ten primary participants.

One woman was used as a secondary participant; she did not meet the primary criteria as, at the time of the interview, she was twelve weeks postpartum. Her interview was used to validate the researcher's interpretation of data from earlier interviews. She provided no new information but her story indicated that the themes and categories that were arising seemed to make sense when compared to the earlier data. Only one interview was used for validation since the primary participants' experiences were unique to the participants and their families, yet similar enough for common themes to be revealed throughout data analysis. In consultation with one of the thesis supervisors, a decision was made that the eleven participants had provided a sufficient amount of data for collection to be discontinued. A discussion of how the sample was accessed follows.

Access Procedures

Women who were interested in receiving more information about the study contacted the researcher by calling the number provided on the information letter or by having their midwife call the researcher to say that they were interested. The researcher then used the process of *primary selection,* to screen the volunteers. In *primary selection,* the researcher is able to assess, by conversing with prospective participants, who would likely have the knowledge required and be willing to be involved in the study (Morse, 1991). These two access procedures will now be explicated.

Information Letter. Letters of information (see Appendix C) about the study were made available to the midwives working in one Midwifery Clinic, in a major Western city. In addition, extra copies of the letter were placed on the coffee

table in the waiting room for any women who might be interested. The information letter had the researcher's telephone number with a brief description explaining the purpose of the study, participant's role in the study, time commitment if enrolled, and a description of how the information shared would be kept confidential. Interested women contacted the researcher for more information; they were told about the inclusion criteria and the time commitment required for a 'typical' interview session. A 'typical' interview session was described as lasting approximately one hour with the participant 'telling her story' from the time when she first heard or decided to have a waterbirth until the actual birth of the baby. Potential participants were also informed that a consent form (see Appendix D) would be reviewed and signed, before proceeding on with the audio-taped interview, only if she felt comfortable and had no further questions. If the researcher perceived that the potential participant met the needs of the study during the telephone conversation and gave verbal consent to enroll into the study, then an appointment was arranged to conduct the interview.

There were fourteen potential participants. Four of these contacted the researcher in response to the information letter. Of the four women who were interested, three were found to be suitable for the needs of the study. The one woman who was not included did not meet one of the inclusion criteria -- she was past twelve weeks postpartum. A total of eleven participants were selected and interviewed. Three contacted the researcher in response to an information letter while the remainder were referred by the midwives. Therefore, the majority of participants were informed about the study by their

midwife.

Midwife. There were four midwives from the community who facilitated access to potential participants for the study. These midwives either heard about the study from other midwives, and then contacted the researcher for more information, or had an opportunity to read the information letter that was provided at the clinic. After learning more about the study from the researcher, the midwives introduced the study to a client, if they thought she would be interested in sharing the experience, during a prenatal visit. The midwives found that their clients were happy to share their waterbirth experience with an enthusiastic listener since it was such a positive event for themselves and their family that they wanted the 'word to be out' so that other women would know. If the midwife did not have an information letter available for the client, then the client permitted their midwife to pass along their name for the researcher to contact them with more information about the study and the time commitment that was involved. Women were considered for the study once the researcher learned from the potential participant's midwife who was interested in finding out more information. If the researcher perceived that the potential participant met the needs of the study during the telephone conversation and gave verbal consent to enroll into the study, then an appointment was arranged to conduct the interview. Of the fourteen potential participants ten were accessed in this way. Of the ten women who were interested eight were found to be suitable for the needs of the study; two of the potential participants did not return the researcher's call after a message was left on their machine with an invitation to call for more information if still

interested. Therefore, of the eleven participants who were selected and interviewed for this study eight were referred by their midwife, and three had contacted the researcher in response to an information letter. In this study it seemed that if the researcher or potential participants were able to speak to each other without connecting with an answering machine first then they were more likely to become enrolled in the study.

Data Collection

Data were collected over a four month period between May 3, 1995 and August 22, 1995. The methods used to collect data were: personal interviews, fieldnotes and journaling, demographic data, and a visual analogue scale measuring perceptions of birth experiences. Interviewing, the primary method of data collection will be discussed first.

Interviews

All of the interviews occurred in the participant's home with the exception of one interview which was arranged at the participant's workplace. At times there were minor interruptions during an interview session from the other siblings, but overall the home setting was comfortable and conducive to sharing. Interviews often took place over a hot cup of tea with cookies which also made the meeting more comfortable and seemed to facilitate discussion. The participants all seemed comfortable with the researcher and with being tape-recorded which was evident through their non-verbal and verbal communication. They were interviewed once in person, with follow-up telephone calls made to two of the participants to clarify a misunderstanding after reading the transcribed interviews. Although proposed, secondary interviews were not conducted as the women's

stories were clear and the data did not need to be clarified. The interviews were all audio-taped and transcribed verbatim by the researcher.

Each interview started with a global request and then was supplemented with the use of semi-structured, open-ended questions (see Appendix E) as needed. Conducting an interview in this manner allowed the researcher to acquire pertinent information while yielding large amounts of data. In addition, it facilitated the participant feeling more at ease in sharing her personally relevant story without any influences from the researcher. Additional guiding questions were added to later interviews, following data collection and analysis of the initial interviews, to assess whether the participant had a similar view about a concept. For instance, a participant during an early interview session commented that the water 'gave her energy'. Therefore, the researcher added the question: "... some women have been telling me that the water gives them energy; what do you think about that?"

The interviews usually lasted for approximately 60 minutes. Participants, who were between two to four weeks postpartum, were interviewed first. This time frame seemed appropriate as mothers are characteristically excited about the birth and more willing to share their birth experience with an enthusiastic listener at this time. Women were not interviewed before two weeks since they needed the this time to rest, adjust to the baby's needs, and to establish lactation. After conducting the interviews, it seemed that participants who were between two to three weeks postpartum had better recall than participants who were between four to twelve weeks postpartum. Eight participants were interviewed when they were between two to three weeks postpartum. Three

participants were between four to twelve weeks postpartum. *Fieldnotes* and *journaling* were also important sources of data collection.

Fieldnotes and Journaling

Fieldnotes supplemented the interview data and were written immediately following the interview session so that the most accurate information was recorded. Fieldnote data illustrated the context of the setting, non-verbal behaviours, and commented on remarks that were made, that were considered important, when the researcher was preparing to leave. Fieldnote data were analyzed in conjunction with the interview data.

Journaling supplemented the fieldnote data. The researcher set aside a journal section for subjective thoughts and feelings during interviews. In addition, all the researcher's thoughts and new ideas, regarding the study, were recorded in this journal along with the researcher's personal biases and assumptions. Having a secondary place to record this information was imperative in order to maintain objectivity and to better understand her influence on the research. Since interviewing was the primary source of data collection, the researcher became an integral part of the data. Therefore, having a journal section facilitated *reflexivity* (Lipson, 1991). *Reflexivity* means that the researcher was able to attune her role, by keeping a journal, so that data could be collected objectively with subjective biases aside (Aamodt, 1983; Reinharz, 1979).

Demographic Data

A *demographic data questionnaire* was completed by the participants to

supplement the interview and fieldnote data. Information on the participant's age, occupation and childbirth history was obtained. In addition, information on the newborn's condition at birth, as well as, their siblings condition at birth, was also included. These data were recorded at the end of an interview session. Having this information aided the researcher with subsequent sampling.

Visual Analogue Scale

A *visual analogue scale* was used to collect data on the participant's perception of birth. The scale (Pfoutz, 1990, p. 172) was adapted by including the adjectives 'painful' and 'relaxed' (P. A. Field, personal communications, October, 27, 1994). This change was considered relevant for this study given the decrease in pain perception that was reported in some of the waterbirth studies.

Pfoutz's scale was originally developed to measure labour satisfaction as part of a larger study examining maternal satisfaction and health care (Pfoutz, 1990). The scale was examined for internal consistency by using Cronbach's alpha. Cronbach's alpha provides a "good estimate of reliability for most situations" (Nunnally, 1978, p. 230). Instruments are considered adequately reliable if Cronbach's alpha is greater than or equal to .70 (Nunnally, 1978). The Cronbach alpha level for this scale was .84. Due to the small population it was considered inappropriate to reassess internal consistency of the scale in this study.

Using the labour agency scale allowed for *simultaneous, methodological triangulation.* This means that both qualitative and quantitative methods were used at the

same time to answer the research question. Simultaneous, methodological triangulation was used to answer the research question in the most comprehensive way. To conclude, by combining these four methods of data collection, the research findings were strengthened and contributed to knowledge development in caring for labouring women. Next, a discussion of how data were analyzed follows.

Data Analysis

Data analysis was conducted concurrently with sampling and interviewing. By doing this, new questions or ideas that arose could be asked in subsequent interviews. In addition, conducting a preliminary analysis facilitated the sampling needs of the study. The transcribed interviews, fieldnotes, and a journal were analyzed inductively by *content analysis* as described by Miles and Huberman (1984). The demographic data were analyzed by assessing whether or not the information that was contained in the transcripts and fieldnote data concurred with the information that was provided in the *demographic data questionnaire*. The visual analogue scale was analyzed with metric measurement, frequency of responses, and mean scores. To begin, a discussion of how the *visual analogue scale* was analyzed will be given. Followed by a description of how the remaining data were analyzed by *content analysis*.

Visual Analogue Scale

The visual analogue scale was analyzed in the following steps: First, the 10 cm lines, that lie between the two columns of adjectives, were divided into three equal sections of approximately 3.3 cm. Section I had responses that most closely resembled the

adjective listed on the left-hand side. Section II represented responses that were undecided. Section III had responses that most closely resembled the adjective listed on the right-hand side. Second, a separate piece of paper was set aside to record *frequency* of responses. Third, a notation was placed in the section where the 'X' crossed the line on this separate piece of paper. If the 'X' seemed to be between two sections, then the centre of the 'X' was examined closely to see where it actually lied on the line. Fourth, the results of the participant responses, for each of the ten lines, was tallied. Fifth, the adjective containing the most heavily recorded section was bolded. Finally, the results of this analysis were compiled into a table format (see Table 4-4).

The visual analogue scale was also used to validate the findings from the interview and fieldnote data. After the results of the visual analogue scale were tabulated for frequency of responses, mean scores were calculated for each participant for validation. Calculation of individual mean scores was conducted in the following steps:

First, the researcher measured where the 'X' was along the 10 cm line in centimetres from the negative adjective, which represented zero, to the positive adjective, which represented 10 cm. Some lines were measured left to right, and some lines were measured right to left depending on which side of the margin the negative adjective was located. The researcher continued until each of the participant's eleven responses were measured. Second, the eleven responses from each of the participants were totaled and then calculated into a mean score. For instance, a 'total measurement' was divided by the 'number of test items' to achieve a participant's 'mean score' (96 / 11 = 8.7 out of 10).

The remaining participant scores were totaled and then calculated in the same way. Third, the measurements and calculations were checked twice for accuracy. Fourth, a sample mean score was calculated by adding each of the participants' mean scores and then dividing by 10, which represented the number of participants who filled out a visual analogue scale. Fifth, a comparison of the sample mean score with each of the participants' mean scores was done. Finally, the results from this analysis were reported in Chapter IV (see p. 87).

Content Analysis

The goal of conducting content analysis, as described by Miles and Huberman (1984), is to express what is described by the group under examination "as precisely as possible, attending to their range and generality and to the local and historical contingencies under which they occur" (p. 19). The goal in this analysis was to provide a rich description of what it is like to have a waterbirth from the woman's perspective.

Content analysis is conducted in three stages: *first level coding*, *pattern coding*, and *memoing* (Miles and Huberman, 1984). *Coding* is "the process of identifying persistent words, phrases, themes or concepts within the data so that the underlying patterns can be identified and analyzed" (Field & Morse, 1985, p. 137). In general, *coding* begins by assigning a specific word (code) to a group of words with a common meaning. In this study, the researcher found 'codes' in the words from the participant's transcripts after data collection was started. Next, these 'codes' were divided into key categories. By

working with the data in this fashion, *coding* facilitated data analysis because large amounts of information could be simplified into manageable amounts. In addition, large amounts of data can become more meaningful if it is colour coded.

The transcripts for each participant were printed on different coloured paper. This was done for three reasons: 1) to identify the source of the data, 2) to identify the number of participants who commented on a theme or category, and 3) to determine if a category looked like it was heavily quoted, but in fact the category was only based on just one or two sources. After each participant's transcript was assigned a colour, the colour-coded segments of transcripts were cut and then pasted onto the appropriate page with the theme labeled at the top of each page. The piles of themes were organized into groups or key categories. During data analysis, these key categories seemed to divide into two separate areas: aspects of water, and mechanics of water. Later, some of the cut and pasted segments appeared as quotations in the presentation of the data. A more specific description of how data were analyzed using *content analysis* follows with examples from one of the transcribed interviews from this study.

First Level Coding. In first level coding the purpose is mainly descriptive. Each phenomenon was assigned a code, that described its attributes, as the researcher examined the data in blocks. Thirty-five codes were identified and then operationally defined. To reach this point, key words were underlined in the transcripts and then isolated to the right-hand side margin. For example, the following segment will illustrate how first level coding was conducted:

> We would go to the Mill Woods wave pool and I would be a beluga and it was just so nice in those waves because when I was pregnant the first time and trying to imagine what labour would feel like and you hear stories of it being like waves. I thought well um, this is a good sort of physical analogy for me to be in these waves and just sort of work with them and so I would go into the deep water and um I would tread water using a really slow stroke but using the same rhythm of the waves and something about the rhythm and the waves were really enjoyable for me and I think that is why it just translated well. When I was pregnant with Kira I wanted to touch base with the water again and it was interesting to be in labour again and experiencing labour as waves. (Barbara, p. 7)

In the right-hand side margin, the following comments were made by the researcher: 'imagined herself as a beluga', 'imagined contractions as rhythm and waves', and 'imagining contractions as rhythm and waves helped her in labour'. After first level coding was completed, then the researcher proceeded on with *pattern coding*.

Pattern Coding. The second stage of analysis, *pattern coding*, provides potential explanation of the patterns and relationships which the researcher identifies as emerging from the data. These codes are placed into categories of common themes or constructs (Miles & Huberman, 1984). During this stage, codes that were labeled in the first level coding may be renamed as the process of data collection and analysis continues. Therefore, the purpose of *pattern coding* is to infer and not simply to just reiterate or describe what was originally stated by the participant.

Pattern coding makes the data more meaningful since common codes are pulled together into themes or constructs. For this study, the researcher condensed the thirty-five descriptive codes, from first level coding, into thirty pattern codes. Two of these pattern codes, *media* and *mind set*, became subtitles when the data were presented. Using the

above transcribed segment as an example, the researcher condensed the code 'rhythm and waves' into the pattern code '*visualization*'. This pattern code was later renamed '*visualizing*' because the researcher, in consultation with one thesis supervisor, thought the 'ing' ending would be more appropriate as it was a *process* that women used while they laboured in water. The third and final level of content analysis, *memoing*, will now be discussed.

Memoing. The purpose of *memoing* is for the researcher to be reflective. *Memoing* involves conceptualizing the emerging themes and relationships (Miles & Huberman, 1984). In this stage, the researcher recorded all insights, interpretations, and linked themes and ideas that emerged from the data. The researcher was able to progress to the conceptual level of analysis. For instance, the thirty pattern codes were organized into eight key categories. Using the aforementioned transcribed segment as an example, the researcher organized the theme '*visualizing*' into the key category '*process*'. Another example, the pattern code '*media*' was organized into the key category labeled '*context*'. To conceptualize emerging themes and relationships, the researcher found it helpful to create a large chart on a wall with the eight key categories and corresponding themes. Having the key categories and themes mapped out on the wall facilitated the organization of various thought processes (see Table 3).

To conclude, content analysis continued until no new categories or relationships were discovered. The analysis of data provided a rich description and insight into how women perceive their waterbirth experience. The results from the analysis will be

Table 3

Conceptualization of Key Categories and Themes

ASPECTS OF WATER	MECHANICS OF WATER
CONTEXT	***TUB/POOL CHARACTERISTICS***
Midwife	*size of tub/ pool*
media	*time requirements*
birthing films	
support	
socialization	
PROPERTIES	***POSITION***
relaxation	*hands and knees*
energy	*sitting*
comfort	*floating*
support	*lying back*
PROCESS	***MATERNAL OUTCOMES***
focus	*mind set*
distracting	*warm water immersion*
visualizing	*waterbirth*
vocalizing	*affinity for water*
	shower or bath preference
ATTITUDE	***NEWBORN OUTCOMES***
time	*newborn behaviour*
healing	*sibling behaviour*
contractions	
pain	

described in Chapter IV, and later discussed in Chapter V with the implications of these findings.

Methodological Rigor

For a qualitative study to be considered valid, it must meet certain criteria for achieving rigor. Guba and Lincoln (1981) discuss four criteria for meeting rigor in scientific research: truth value, applicability, consistency, and neutrality. Sandelowski (1986) discusses the four criteria in relation to research studies with human participants. The criteria for assessing rigor in this study was based on Sandelowski's discussion of rigor.

The *truth value* of a study refers to the credibility of the research. Credibility is achieved when the descriptions or interpretations of the behaviour are so true that the participant could immediately recognize it as herself (Sandelowski, 1986). In this study, the researcher obtained rich verbatim data, and utilized a secondary participant to clarify and verify the findings by having her comment on Table 3. The secondary participant agreed with the findings and found them interesting. In addition, the researcher maintained a journal to record all biases, feelings, and experiences to help maintain objectivity.

The second criteria for meeting rigor, *applicability*, is achieved when the participants can validate the findings and fit them into the context of the study situation (Sandelowski, 1986). This was achieved by obtaining a thick description of the waterbirth experiences from each of the women in the study. The researcher regarded both typical and atypical experiences so that the participants could view the findings as

meaningful and applicable to their own experience.

Third, *consistency* or auditability is achieved when another researcher can do an 'audit trail' and produce the same or comparable findings given the same data, perspectives, and situation (Sandelowski, 1986). Using a journal strengthened the auditability of the study because the researcher's biases, thoughts and ideas were set aside from the fieldnotes. In addition, double-coding was also conducted for three of the transcripts whereby the data were first coded independently by the researcher and one thesis supervisor, and then checked together. The results were similar. To assist the researcher's dependability, regular discussion through meetings and over the phone were held with the one thesis supervisor for feedback, guidance, and for detecting any biases. Finally, background information on the researcher, and how the researcher first became interested in the research topic was also provided to enhance auditability.

Finally, *neutrality* refers to being free from bias, and concerns the research findings only (Sandelowski, 1986). This was achieved by incorporating the truth value, applicability, and consistency in the study. By keeping a research journal, having triangulation of data collection methods, and through regular contact with one of the thesis supervisors, *neutrality* was enhanced. Next, the ethical considerations that guided the researcher's conduct in this study will now be discussed.

Ethical Considerations

Ethical issues must be considered in every research study. The challenge with qualitative research is that ethical issues are more subtle and less visible (Lipson, 1991).

The following discussion describes how the researcher's conduct was guided by ethical considerations in obtaining informed consent, maintaining confidentiality and anonymity of the participants, and considering the issue of risk versus harm for the participants.

Informed Consent

Women who were interested in sharing their perceptions of their waterbirth experience could respond freely to the researcher after reading an information letter, or hearing about the study from their midwife. Interested women could contact the researcher at the number provided in the information letter (see Appendix C). Many of the women chose to have their midwife call for them on their behalf if they did not have an information letter at the time. Two of the midwives did not have information letters to give out to their clients, but heard about the study from a midwife who knew the researcher. These two midwives phoned the researcher for more information regarding the study before telling a woman about the study. The information letter provided the information necessary for the *informed consent* purpose of the study, research methodology, description of possible risks and benefits, statement that any questions have been answered, and a statement that the participant is free to withdraw from the study at anytime. If a woman had her midwife call on her behalf, the same information was provided by the researcher over the phone to the interested woman. Initially, the informed consent was given verbally over the telephone. Prior to signing the formal, written consent (see Appendix D), the potential participant read the information letter. The reading and signing of the written consent, which were both below a grade seven

reading level, was arranged at the first appointment. Having the information letter and written consent at this reading level supported the principles of voluntary, informed consent. Moreover, the participants were not coerced to participate in this study, and were reminded that they could withdraw from the study any time without any problems.

Confidentiality and Anonymity

Confidentiality of the participants was most important to the researcher because the participants were sharing very personal information and would be vulnerable if confidentiality was not maintained. *Confidentiality* was assured by: allowing only the researcher and one thesis supervisor access to the audiotapes and transcripts, having the information shared held in strict confidence, removing all names used in the transcripts, locking up the consent forms in one place and the audiotapes and transcripts in another, and by having the audiotapes and transcripts accessible by the researcher only.

Although the participants were not anonymous to the researcher, care was taken by the researcher to maintain *anonymity* in the study as a whole. *Anonymity* was maintained by giving each participant and or family member who was mentioned in the transcripts a pseudonym, labeling all tapes with a code, and by not revealing any participant's involvement in the study. In addition, the anonymity of the midwives who were mentioned by the participants in their experiences was maintained by removing the midwife's name from the transcripts and replacing the name with a [midwife] notation instead.

Risk versus Benefit

The researcher perceived no *risks* to the participants who decided to join in this study. The women were happy to share their positive experience with the researcher. In addition, precautions were used to maintain their confidentiality and anonymity in the study. There were two possible *benefits* for participants: the participants may have felt a sense of satisfaction after discussing their birth experience with an enthusiastic listener, and all participants had the potential of feeling rewarded for contributing their personal expertise about waterbirths in order to help prospective labouring women in the future. The raw data and consent forms will be kept for the requisite time of seven years.

IV. FINDINGS

In this chapter women describe in their own words how they perceived their waterbirth experience. To begin, a general description of the participants is provided with pseudonyms; in addition, all potentially identifying features have been changed or omitted in order to maintain their anonymity. Included with this description of the participants is a summary of the final place of birth, kind of waterbirth (labour only or labour and birth), and number of women who were either primiparous or multiparous.

The findings from this study are separated into two parts. Part One describes four aspects of water that influence how women perceive their waterbirth experience. The four aspects of water that emerged from the data were: *context, properties, process,* and *attitude*. Part Two provides three conditions that need to be considered in order to understand the mechanics of using water. These three conditions were revealed as: tub/pool characteristics, position, and outcomes for the mother and newborn. Each of these seven themes consist of key categories. The most important category is mentioned first followed by categories that were less heavily quoted.

The Participants

The participants were eleven women who had a waterbirth between May and August of 1995. Two participants intended to labour only in water. Of these two participants, one gave birth in water. Three participants did not plan to use water in labour but decided to give it a try upon their midwife's suggestion. Of these three participants, all of them laboured in water. Six participants wanted to labour and then

give birth in the water. Of these six participants only one was able to birth their baby in water because of concerns that arose during labour. One of the participants had a reaction to the water that was different from the other ten; this participant was considered a negative case in that she was the only participant who did not perceive water to be helpful during her labour.

Characteristics of the Participants

All of the participants were married, between 23 and 42 years of age, and had midwives as their primary caregivers. All but one of the participants planned to have their waterbirth entirely at home. Five of the women worked in the home, one was a student, three worked part-time and two worked full-time outside of the home. The occupations varied from homemaker to teacher, and health professional to business person. All but one of the participants were Canadian citizens; one was from a European country. There were four primiparous participants. Seven of the participants were multiparous having had one to two previous births. Two of these seven participants had a previous homebirth experience. Overall, with respect to the demographic data obtained, the group was quite homogeneous. A summary of the participant characteristics is illustrated in Table 4-1.

Although each participant and her family perceived their experience as unique, common themes were unmasked and revealed through data analysis. These common themes will now be described with verbatim quotations from each of the participants. The following quotations are attached to a pseudonym, that was assigned to each of the

Table 4-1

Participant Characteristics

CHARACTERISTIC	DISTRIBUTION				
Age Range	20-24	25-29	30-34	35-39	40-44
	2	**3**	**3**	**2**	**1**
Marital Status	Single		Married		
	0		**11**		
Birth Experience	Primiparous		Multiparous		
	4		**7**		
Place of Birth	Home		Hospital		
	8		**3**		
Previous Homebirth	Yes		No		
	2		**9**		
Waterbirth	Labour Only		Labour & Birth		
	9		**2**		
Employment	Working In Home		Full-Time	Part-Time	Student
	5		**2**	**3**	**1**

participants earlier so that confidentiality and anonymity could be assured. The primiparous participants were: Andrea, Dara, Heidi, and Kathy. The multiparous participants were: Barbara, Connie, Elsbeth, Fiona, Gisella, Ingrid, and Joanne.

Part One: Aspects of Using Water

Four themes emerged from the data that were identified as being important with respect to how a woman perceives her waterbirth experience. These four themes were: *context*, *properties*, *process*, and *attitude*. To begin, each of these four themes will be presented with the key categories that supported each aspect. Lastly, a discussion of how these four themes come together to influence how a woman perceives her waterbirth experience will be given.

Context

During the interviews, participants were asked how they first heard of waterbirths. With their answers often came the rationale for why they made the decision to have a waterbirth. The following responses were differentiated as either a primary source or a secondary factor. Primary sources were identified as: *media, midwife,* and *television. Support* and *socialization* were considered secondary factors, which influenced the decision. Although the responses were segregated as either a primary or a secondary source, both must be considered together when contemplating the kinds of influences that affect a woman's perception about her decision to have a waterbirth.

The *media, midwife,* and *birthing films* are labeled as primary sources because they are sources that initially influenced how women heard about waterbirth. The first

available or noticeable information on waterbirth, for the participants, was through one of these sources. The media was most heavily quoted for introducing the notion of waterbirth to the participants. For this study, the *Edmonton Journal, magazines* and *books,* and *television* disseminated the most attention and information on waterbirth.

Media. The article in the *Edmonton Journal* dated Sunday, February 19, 1995 alerted most of the participants first to the concept of waterbirth or supplemented their knowledge of waterbirth. This article seemed particularly useful because the participants could relate to the family in the article. Barbara commented that the article was 'close' to her own experience and that it 'helped' her: "Then much closer to my own experience was the article in the *Edmonton Journal* about the waterbirth and photos and so on ... so that was very interesting too so that helped" (p. 2). For Connie, the article in the *Edmonton Journal* facilitated her decision to have a waterbirth:

> I think for sure when I decided it was from seeing the article in the *Journal.* Yeah, when that came out I decided to have a waterbirth.... It was sort of a seed way back three years ago but it didn't come sort of to the forefront until that article sort of clinched it. (p. 1)

Three of the eleven participants first heard of waterbirth from reading other articles in books and magazines. Gisella commented that she became 'very interested' in waterbirth when she first read about it: "I have read it in [European country] before when I was pregnant with Julie because the women in France have done it in the sea?! And I was very interested in this and also the women in Belgium" (p. 8). One participant mentioned that she first heard of waterbirth from the 'news'. Dara recalled: "I heard

about it about ten or fifteen years ago on the news. It was a story out of Russia" (p. 5).

Midwife. The second most common source of information on waterbirth was the *midwife*. A participant's midwife often introduced the idea of using water in labour and or birth. After this information was given, the participants became more alert to other sources that commented on waterbirth. For Elsbeth, she 'decided' to use water after speaking to her midwife: "I basically decided about the water as soon as I had talked to [midwife]" (p. 1). Hearing about waterbirth from the midwife seems to make this option for labour more plausible and realistic: "The midwife mentioned that they can do waterbirths that I realized that this is something that real people actually do not people who are experimenting" (Heidi, p. 2).

Birthing Films. The third most common source of information on waterbirth were *birthing films*. For two of the participants, birthing films initially introduced the concept of waterbirth. Two other participants were alerted to a birthing film on waterbirth after first hearing about it from another source. The birthing films were either viewed privately at home or in prenatal class: "...deciding to use the water came from looking at all the films and videos of the prenatal classes which [midwife] taught" (Andrea, p. 1). For a summary of sources most commonly utilized by the participants see Table 4-2. Although the *media, midwife,* and *birthing films* served as primary sources that facilitated the women's decision to try water, secondary factors that seemed equally if not more important for influencing their decision to have a waterbirth, were *support* and *socialization.*

Table 4-2

Most Commonly Used Primary Sources

SOURCE	ORDER OF RECOGNITION			
	Primary	***Secondary***	***Tertiary***	***Total***
Media:				
Edmonton Journal	2	1	1	4
Magazines/ Books	1	3	1	5
Television	1	0	0	1
Midwife	4	0	0	4
Birthing Films	2	2	0	4
Friend	1	0	1	2

Support. *Support* is what kind of positive or negative influence family and friends had on the participant. All of the participants cared about how their family and friends responded to their decision. Responses were both positive and negative. Family or friends who were initially skeptical about the idea often changed their minds and became proponents for using water following the birth:

> I'm a very determined person and even my husband didn't want to have a baby at home and now he swears by it and wouldn't want to have a baby any other way. But ah, they (family) thought it was neat that I wanted to have a baby in water and stuff though they just didn't want me to have the baby at home. (Elsbeth, p.5)

Connie's husband was "...all for it" (fieldnotes, p. 3) once he became informed about how she (Connie) would be more comfortable in the water and about the safety factors. Eight of the participants felt supported by family and friends. Three of the participants did not feel this support and consequently carried out their plan and then informed their family after the birth was all over.

> Well to tell you the honest truth, nobody knew I was having it at home to begin with.... I didn't tell my mother or my in-laws or anything because a lot of them are really narrow minded and think its like something from the sixties the hippies or like. (Joanne, p. 9)

One way that participants were able to influence their family and friends so that they could be supportive about their decision to use water was by being 'excited' whenever the topic came up in discussion:

> I just took the tack that I was excited about this pool and that I wanted to labour in it because water just helps me so much in my first birth that um, when I was telling people, like my family and friends, that I had a pool to labour in... um I said so with excitement and generally speaking ... people were supportive. (Barbara, p. 4)

Socialization. *Socialization,* how women responded to other women and their babies who had waterbirths, was the other important secondary source. Socialization enabled the participants to conceptualize themselves having a waterbirth and this consequently increased their confidence about having a waterbirth:

> You see a million women doing it, so you know you can do it.... I really just remember that story the most (waterbirth) out of all the video stories that were being told, you know. It just looked to me to be right (Andrea, p.1).... I remember so succinctly and I can remember realizing that I must look the same. (p. 11)

Socialization also helped women by encouraging them to try water because they wanted to have an experience that was opposite to what a close friend or family member had:

> So everything seemed to go wrong with her and it was kind of funny afterwards because we were talking about it and she said, 'I'm sure glad I was in the hospital because of all the complications.' I thought that the complications were first because of getting labour induced and then needing Demerol and everything kind of leaded (sic) to the next thing. So just hearing about her experience caused me to do a kind of about face regarding the waterbirth. (Heidi, p. 2)

The third way that socialization was revealed in the data was with the babies who were born under water:

> It was so amazing to see this baby's serene face underwater. My reaction as an adult was, 'Oh my God there's a child underwater, get it out!' But then you realize, 'Oh, it's okay because this baby comes from a water environment and it hasn't met the air yet so of course it's fine.' Once I realized that and saw several more waterbirths in the same video, um, the image of that serene little face, you know, quite moved me and I thought, 'Oh, of course this is fine.' (Barbara, p. 2)

Heidi concurred with Barbara's point: "...when you are underwater everything is so peaceful and so it would be peaceful too for the baby who had just come from being in me to just going in the water" (p. 1). Next, *properties* the second major theme that

influences how women perceive their experience of using water in labour follows.

Properties

During the interviews, participants were asked to describe what it was like to labour in water. All the participants provided rich descriptions of what their waterbirth experience was like for them. As a result four key categories emerged from the data that were considered important properties of water. These properties were identified as: *relaxation, comfort, energy*, and *supportive*.

Relaxation. *Relaxation* was clearly identified as an important property of water. The participants claimed that the warmth of the water helped them to relax. This feeling of relaxation was especially noticeable in between contractions. Relaxation seemed to have a direct and indirect affect on the participants. Directly, the participants reported feeling very relaxed in labour to the point that some would fall asleep in between the contractions. Indirectly, relaxation seemed to help them cope more readily with their contractions since the water relaxed them enough so that they could concentrate on the next contraction without feeling too overwhelmed.

Andrea describes how the water helped her to relax to the point of sleeping in between contractions. Although she was likely only asleep for a few seconds, it is important to note that to her she felt like she was asleep for "ages and ages and ages." Andrea also describes how being deeply relaxed helped her to cope with the contractions:

> I put my head against this person's shoulder. I fell asleep for what seemed to me to be ages and ages and ages, but what was apparently about 50 seconds until the next contraction came. And I did that from 7 in the morning until 3 in the

> afternoon. Umm, I did that and I really felt like I could do this forever. Because it was working. We were doing what we had to do -- baby and I. (p. 8)

Dara would concur with Andrea's description. Dara described how water was the only way that she could relax enough to cope with her contractions:

> I found the only way that I could deal with the contractions was if all of my muscles of my body, my leg muscles in particular, were relaxed during the contraction and that was just not possible without water" (p. 2).... I was actually so relaxed I slept between contractions. (p. 5)

Elsbeth, Heidi, and Joanne provide rationales of how water facilitated their labours: "It relaxes you more. It keeps you calmer" (Elsbeth, p. 4). Heidi claims that, "You could just feel your whole body relax just from the warmth of the water (p. 4).... I think the difference for me was that I was just able to relax more in between the contractions" (p.5). For Joanne, "If I was tense, I was no longer tense in the water" (p. 3).

Comfort. *Comfort*, the second property that was identified during data analysis, was also heavily stated by all the participants who were positive about the experience. Like the property of relaxation, the warmth of the water helped the participants to feel more comfortable because the warm water facilitated their relaxation efforts. However, comfort was differentiated from relaxation because it involved benefits that were more mental in nature and not just physical. Comfort also seemed to have direct and indirect affects on the participants. Directly, comfort provided the participants with a sort of mental relaxation. This in turn had a beneficial indirect affect on the participants. Indirectly, the participants found that the water decreased their anxiety so that they could focus or visualize to help cope with their contractions.

Gisella explains this phenomenon: "Because if you are so comfortable in this environment and this what I also mean with calm down [you] have time to concentrate on the birth because [you] feel nice and comfortable in this environment (water)" (p. 7). Barbara also explains how feeling comfortable benefited her both directly and indirectly:

> I did feel more relaxed and more comfortable and um, I think in a way somehow I think that the water and being in that place (the pool) helped me to focus too on what I was doing and the sensations inside my body (p. 3).... Internally in my mind I think it just brought back that feeling that I can just relax within this wave, it's a different wave of course. But um, somehow all those physical sort of symbols really meant something for me but it has a real basis in physical comfort for me too. (p. 7)

Occasionally, participants needed or decided to leave the water, but wanted to return to the water because it "felt so good." Many of the participants described their experience in water as 'feeling so good' and 'very comforting' (Heidi, p. 4, 5; Ingrid, p. 1, 2, 6; Connie, p. 5; Joanne, p. 1). Andrea recalled feeling "completely wonderful" in the water: "In between the contractions I could really relax and feel comforted by the water and the warmth of it. I felt completely wonderful in between contractions. Tired but wonderful" (p. 7).

Energy. The third property is *energy*. This category was less obvious during data analysis, but held two important attributes that were common with most of the participants--commitment and endurance. First, commitment a direct outcome of energy was communicated in different ways. However, the end result was that whether the participants felt that the water could give them energy or remove excess energy in order to achieve homeostasis, the water facilitated their ability to commit to the contractions: "I

felt like I had the energy to commit to the contractions.... So I almost feel that what the water did for me was keep my energy quite buoyant" (Andrea, p. 6). Gisella commented, "...for me it's not that I need energy I have so much energy that I need to bring it down and I know water makes me feel relaxed so this is the reason why I had chosen water" (p. 7).

Ingrid provides an example of how the water helped her to commit to her contractions again by giving her a "second wind". There was a time near the end of her labour when she felt she could not labour any longer, but Ingrid did not realize that having water could facilitate her progression of labour. Once she heard from her midwife how far along she was she got a 'second wind':

> There was a period of time when it wasn't easy and I was getting angry and I was thinking to myself I don't care. I was mad and I didn't want to do this anymore (p. 5).... But at the end when she had checked me, if I had only been four centimetres, well then no I can't do this. But when it was eight it was okay. I felt I got a second wind there when I decided no I can and I started going to myself 'I can, I can'. (p. 6)

The second attribute, an indirect outcome of energy, was endurance. Although the the participants did not actually use the word 'endurance', their stories of long, arduous labours sufficiently supported the notion of endurance: "It was 36 hours of labour....I did get a couple of hours of sleep because I was pretty exhausted" (Dara, p. 4). Heidi adds, "By the time I got into the tub it was about 5:30 in the morning and I was getting really tired by then so in between contractions I just wanted to rest as much as I could" (p. 5).

Supportive. The fourth property is *supportive*. Supportive was differentiated

from the category 'support' under the theme *context* because support describes the influences of family and friends, where as, supportive describes how the water is helpful to the women in labour. Supportive also had attributes that were directly and indirectly advantageous for the participants. Directly, the participants felt comforted by the supportive properties of water:

> It just really helped having it around my back and that overall heat is what really helps because it is water. You know because if you use a water bottle or a heating pad you can only put it on one place and this way if your legs were aching, which I found mine were, it just relieved all that. It took some of the gravity off you even though it wasn't that full. (Elsbeth, p. 4)

In this last example, 'supportive' is differentiated from the category 'comfort' because not only does it provide some relief from discomfort from the warmth of the water but it also allows the women to feel weightless with freedom to move. Freedom to move, an indirect benefit which results from the supportive nature of water was also experienced by the participants who laboured in a birthing pool:

> I just think that the water really supported the weight of my body and I was able to just move around into different positions more easily because of the water.... I found that I was able to move around more freely because of the water. (Heidi, p. 5)

For a summary of the properties of water see Table 4-3. Next, *process* the third major theme that influences how women perceive their experience of using water in labour follows.

Process

The participants shared routines or techniques that were used in conjunction with

Table 4-3

Summary of the Properties of Water

PROPERTY	DIRECT OUTCOMES	INDIRECT OUTCOMES
Relaxation	***deep relaxation/ sleep***	***coping***
Comfort	***calming***	***concentration***
Energy	***commitment***	***endurance***
Supportive	***comfort***	***freedom to move***

water to facilitate their labours. As a result four key categories emerged from the data that described personal ways of coping. These personal ways of coping were identified as: *focusing, visualizing, distracting,* and *vocalizing.*

Focusing. In this study, *focusing* refers to how the participants concentrated while labouring in water. In this sense, the participants would not be concentrating on a particular object or abstract thought; instead, they would be more 'focused' on the task at hand--preparing to work on the next contraction. For example, some participants felt that the water helped them to focus on their labour. These participants found that the water made the difference because they had not used water with previous labours. In previous labours they were aware of where everyone was in the house, where the pets were, or if the washing machine was on. These participants found previous labours more difficult because it was more difficult to concentrate.

> Well like with the first birth I was distracted like I knew what the people around me were doing.... And I knew where my husband was where my mother (was). She was going in and out and doing things.... I heard the dog and he had been panting. I knew where everybody was in the house. Whereas with this one I was in the bathroom and I knew when my mom came in but I was more focusing on what I was doing instead of where everybody was.... And I knew [husband] was downstairs but I didn't care. I'm just going to focus on what I'm doing. (Connie, p. 2, 3)

Some participants found that the water helped them to accept the contractions, and made it easier for them to relax, focus, and be more aware of what their body was doing (Andrea, p. 23; Barbara, p. 3; Connie, p.3; Dara, p. 4; Gisella, p. 7; Ingrid, p. 1, 2; Joanne, p. 6). Ingrid argued that using water in labour was more effective than analgesics

for coping with labour: "I can't imagine doing that with Demerol because it confuses you, you know? Actually I had Morphine once and it gets you all stoned and how can you concentrate and relax when you're all whacked-out right?" (p. 1).

Visualizing. The second major category of process was *visualizing*. The participants who utilized visualization techniques found it easier to concentrate on their chosen images because of the water. In previous labours, water was not used during labour and consequently it was more difficult for them to find a coping technique that worked for them. The visual images varied from being quite linear to quite abstract in thought. Gisella found it helpful to think linearly: "So it was great lying there, one contraction after another and then pushing him out so everything was in a line" (p. 11). One of the participants was concerned that the baby may be posterior so she found it helpful to visualize her baby coming down and turning for birth:

> It's not going to be posterior. It's going to rotate. It's going to come down and once I was relaxed I could think of that more because I was more at ease and not so tense... I found that being more relaxed was easier to think. (Joanne, p. 6)

Ingrid and Andrea utilized abstract images which were also very effective:

> I was thinking things like open and I was imagining... the petals of a rose opening and I was doing that to help me relax. And I was doing that instead of trying to imagine my cervix. Just imagining a flower opening. And the water just helped with that open idea, the feeling of just opening and relaxing. (Ingrid, p. 3)

Like Ingrid, Andrea also imagined her body opening up. Andrea also found it helpful to learn the 'shape' of her contractions and then to imagine them as foothills developing into a mountain with the final most intense peak of the contraction:

> And I learnt the shape of them. You know the shape of the contraction... what I was finding was once we hit eight centimetres the contractions had three peaks to them. And the last one was going to be the hardest. And it was just like rolling over mountains. Like going through foothills and getting to the mountain. (p. 8)

Distracting. *Distracting,* the third major category of process was differentiated from 'focusing' because the participants who utilized this technique were concentrating on an actual object. 'Distracting' was also differentiated from 'visualizing' because these objects could potentially be observed by external labour support persons. Having water available for labour facilitated one participant's ability to be distracted; the water relaxed this participant to the point that she could more easily concentrate on a "screw" which helped her cope with the impending contractions:

> I kept focusing on this screw.... The screw had this cross on it, you know like a screw. And during a contraction I would go from one corner of the cross to the next and I did it at a certain rate. And I would go around a certain number of times and that would be it for the contraction. Kind of my way of timing my contractions, that worked for me. (Dara, p. 4)

Vocalizing. *Vocalizing,* the fourth and final category of process was a way of coping that assisted two of the participants. In their stories, vocalizing is differentiated from 'screaming' or 'crying' because it was very much controlled and changed with intensity as labour progressed:

> And I can remember in the beginning, realizing ... once I got into that water that at first I was I was kind of screaming. You know, and it was too high in my throat. And I realized that that's not helping me and I want to yell. And I want to shout but it's not kind of screaming of pain that I was doing. What I learnt, what I realized was that I wanted to do something different with my voice. And find the different sounds. And when I found that sound, it was like I thought I could do it forever. It was strange when I found the sound, and I found that I had this warm water with me, I felt like I could like be there forever. And it was really tough and intense, but I could do this forever. I truly found it an amazing experience. Just

> being ... just feeling your body opening up ... just letting that happen and then making the sound. And if you make the sound you know that the contraction will come to an end (Andrea, p. 8).... And you know it did take some time to kind of get the feel of what sound to make and I know that I changed them. From ... up to eight centimetres that was one kind of sound that I needed to happen. After that, it was very different. It was much ... lower. I mean it just ... I felt my sounds got lower, lower, lower in my throat. And more and more kind of great big round sounds. (Andrea, p. 10)

Barabara expected this birth to be "quite a bit quieter (compared to her first birth) ... but it wasn't" (p. 5). Barbara also used "real deep" sounds. She found that "bellowing" ... "just seemed to be a very natural expression of ... what was happening" (p. 6). Next, *attitude* the fourth and final theme that describes how women perceive their experience of using water in labour follows.

Attitude

During the interview, the participants were asked to describe how they perceived their waterbirth experience. While reviewing their stories four key themes seem to continuously emerge from the data. These four themes were later identified as: *pain, contractions, time,* and *healing.*

Pain. In this study, *pain* refers to the 'fine line' that determined whether or not labour was in good control or poor control: "It was like there was a boundary. And that boundary was where pain began" (Andrea, p. 12). Interestingly, many participants often did not label their feeling of the contraction as 'pain' while they were in the water; instead, the term 'pain' was either not used or called 'work' if the labour was in good control. If the participants felt out of control or felt that their labours were not

progressing, then they reported having pain -- in the true sense of the word.

Joanne's definition of pain was different from the other participants. For Joanne, the 'fine line' started at the part of her body that was exposed to the air and not immersed. Joanne would have liked to have had more water in the tub so that her back could have been surrounded by water to help relieve some of her back labour:

> I'm wondering if I had that much heat and water submerged around my back even though I was squatting like this ... the water was up to here ... then maybe the pressure of the water and the mass around me might of made a difference. Because the way I was sitting it only came up to here (pointing to sacral area) so where it was painful it was still exposed like I wasn't submerged. (p. 4)

Dara and Heidi reported that the contractions were just as painful on 'land' as in water. However, the water made the painful labour more tolerable because they could either float to achieve total relaxation of muscles or could relax well in between the contractions:

> There wasn't any real relief function (from water), no actual pain free time but the contractions were very strong. Now the water experience for me during that early period was ... I don't know if I could of endured that (back labour) without the water and the reason for that was that when I was having a contraction what worked for me was to just float. My husband held me, held my hips, so that my body floated and um I was able to relax all of my muscles. (Dara, p. 2)

> I think the contractions were just as painful for me in the tub as they were when I was out of the tub. I think the difference for me was that I was just able to relax more in between the contractions. (Heidi, p. 4, 5)

Connie's perception of 'pain' opposed what Dara and Heidi perceived. Connie found that the water reduced the perception of pain. This may be explained by the fact that this was Connie's second birth at home; whereas, Dara and Heidi were experiencing

labour and birth for the first time:

> It (pain) didn't seem as intense in the water as it did outside. (Outside) it was very very painful and rocking. And when I got into the pool (Connie, p. 3).... I think the rocking actually slowed down. So the water sort of helped me relax so that I didn't have to rock because it helped the pain go away or deal with it. (p. 4)

Often external perceptions of pain were different from the participants perception of pain: "To him I was in pain that whole time. And I wouldn't say that I was in pain" (Andrea, p. 12, 13). Elsbeth, Gisella, and Ingrid found that the water sufficiently controlled the discomfort of labour: "It would have been nice to (have) had a bit more time in there (pool) because it was very relaxing. I mean I didn't need any pain relief" (Elsbeth, p. 2). Gisella commented that, "it doesn't hurt that much like before (with her first birth)" (p. 3). For Ingrid, the water seemed to have the affect of a powerful analgesic: "It was definitely better and more effective than drugs for sure" (p. 1).

The participants seem to have one of two beliefs about how 'pain' was experienced. First, labour became painful once they were not progressing or believed that they could not do any better. Second, labour became painful once they were not immersed in water. This could explain some of the discrepancy that was discovered after the results from the visual analogue scale were analyzed and compared with the transcripts. A summary of the participants' perception of their birth experience is illustrated in Table 4-4.

As a result, the participants' overall perception of their birth experience was very positive: fast, safe, smooth, pleasant, good, easy, beautiful, fair, and relaxed. After the

Table 4-4

Summary of Perception of Birth Experience

	I	II	III	
FAST	*6*		*4*	*SLOW*
DANGEROUS			*10*	***SAFE***
HEAVENLY	*3*	*5*	*2*	*HELLISH*
ROUGH		*4*	*6*	***SMOOTH***
PLEASANT	*6*	*2*	*2*	*UNPLEASANT*
GOOD	*9*	*1*		*BAD*
DIFFICULT	*4*	*1*	*5*	***EASY***
UGLY	*1*	*2*	*7*	***BEAUTIFUL***
REALISTIC	*4*	*5*	*1*	*IDEALISTIC*
FAIR	*7*	*3*		*UNFAIR*
PAINFUL	*4*	*1*	*5*	***RELAXED***

mean score was calculated for each participant and then compared to the sample mean score, a similar conclusion unfolded. The highest participant mean score was 8.7 out of 10; the lowest participant mean score was 4.6 out of 10. The sample mean score was 6.8. Seven of the ten scores were at or above the group average score of 6.8. Interestingly, the multiparous participant who was considered a borderline case because the water did not facilitate the progression of her labour scored 8.0. The lower mean scores came from the primiparous participants, and the high mean scores came from the multiparous participants. Although the findings from this scale represented a small population, an indication of these findings for this study was that women who perceived that the water was advantageous for them in labour tended to score above average, indicating that they perceived their labour in a positive way.

Contractions. *Contractions* refers to how the participants perceived the intensity and frequency of contractions. Contractions in 'water' were often compared to contractions on 'land' or with previous births. The difference between contractions in water and contractions on land was that the contractions in water seem to pass more quickly (Ingrid, p. 3; Connie, p. 3). In addition, the contractions in water were easier to accept (Connie, p. 4; Andrea, p. 23; Barbara, p. 3). For some of the participants the warmth of the water made the contractions seem much less intense. Andrea had to get out of water for a part of her labour. She comments about the contractions when she returned to the water:

> They were a 100 times better. Just a 100 times better to have them in the water. And I remember thinking that 'I'm not getting out of here because if I do it will

> really, really, really be awful. So I'm not getting out of the water'. (Andrea, p. 4)

Joanne remarked on how different her contractions were with this labour in water compared with her labour on 'land' with her first birth. Like Andrea, Joanne perceived her contractions to be much less intense while she laboured in water:

> I've got pictures of me sitting on the chair I was grabbing. The chair it was like, you know tensing up through the contraction but there I was more relaxed. It just relaxed me more so it wasn't um ... I still needed someone to push on my back though, and I was just relaxing more ... I remember [midwife] said, 'My God! Are you ever relaxed.' I was just so relaxed through the contractions. I was like ya I can't believe how relaxed I am. During my first labour I was like not relaxed through my contractions. I was like 'Oh my God' I was really tense. (Joanne, p. 3)

Heidi started having contractions during the night. She was advised by her midwife 'to just try to get some rest if this happens and to try not to get too excited'. Once Heidi had a bath, she was able to get some rest:

> I tried to go to bed but I couldn't get to sleep. So at that time I had a bath and having a bath actually made the contractions stop and so I was able to go back to bed and go to sleep. (p. 3)

Although Fiona wanted to labour and give birth in water, she had a reaction to the water that was different from the other ten; therefore, she was considered to be a borderline case. In Fiona's case, the water seemed to arrest her contractions each time she entered the pool:

> It was very peculiar though. They completely stopped. I mean they were getting fairly intense and that's why (I) got in the tub. Then when (I) got in the tub within seconds they were gone. I mean completely gone. There were no contractions, no signs at all.... Not even like a small one. None. (p. 3)

After Fiona got out of water for the last time, she continued to labour on her bed and then gave birth in the hands and knees position on the floor.

Time. *Time* refers to the participant's perception (perceived time) of how long their labours were compared to how long they actually were ('real' time) according to the demographic data questionnaire (see Appendix B). In this study, all but one of the participants perceived that their labour in water was significantly shorter compared to the documented 'real' time as indicated per demographic data questionnaire. For example, Barbara's perceived time was 3 hours, and her 'real' time was 14 hours according to her demographic data questionnaire:

> (I got into the water) shortly after hard labour started. So that would have been about somewhere between 3:30 pm and 4:00 pm. I think that is a pretty close guess. And um [baby] was born at 6:18 pm. So it wasn't a really long period of time (p. 2).... I really knew it was going to happen when I climbed into the pool. Certainly it did go very fast (p. 3).

Andrea had a similar perception of time passing quickly. Andrea's perceived time was 6 hours, and her 'real' time was 21 hours:

> Things were actually moving along very well. And by 6:00 am I was eight centimetres dilated. And so things started to move quickly. And ... that was only 6 hours (p. 5).... I think that if we hadn't had that here (the pool) then for one thing I wondered just how quickly I would have dilated at all. You know I just felt like things just went swimmingly for the first part you know.... It seemed like it would be this great very fast first labour and delivery. (p. 23)

Both Heidi and Ingrid felt they lost their sense of time while labouring in the water: "I wasn't sure how long I was in the tub for. I really lost my sense of time" (Heidi, p. 5). Ingrid also found that this labour experience was different with respect to time compared to her first experience in labour:

> It was going all so well and I looked at them and said it can't be this easy right so I was just assuming that I wasn't all that far along.... I wanted her (midwife) to check because I didn't want to get out of the tub, because it was helping so much,

> unless I was nearly done. And I was actually eight centimetres so I was really glad, 'Ooo eight!.' So I was thinking it would only be four, you know, when she checked me.... Because it doesn't seem to me like it was as long as it really was (9 1/2 hours).... But it didn't seem that long to me and [midwife] kept saying well this is the worst part but the fastest, trying to encourage me, but I didn't really need that encouragement because I really didn't feel that it was that long. (p. 2)

The multiparous participants reported that this most recent birth experience was 'short for them' (Elsbeth, p. 5; Connie, p. 2; Barbara, p. 4; Fiona, p. 7; Gisella, p. 2, 4; Ingrid, 2). The discrepancies in the results on the visual analogue scale for 'fast/ slow' may be explained by whether or not the participant was experiencing birth for the first time (see Table 4-4).

Healing. *Healing* refers to how the warm water was soothing and comforting for the participants during labour. The participants felt that this sense of healing could be achieved through warm water immersion or through a water-assisted labour. Having a shower, or a facecloth with warm water squeezed over their abdomen by a labour support person was identified as a water-assisted labour in this study.

Andrea, Gisella, and Connie found that warm water immersion was particularly helpful:

> I remember thinking it's amazing what simple things can do.... Heat and water... warmth and water... We are so used to thinking we got to have drugs, painkillers, and all these things that aren't about the simple natural umm care... things that care for you. Water and warmth are very curing. It's just a very healing thing. And we are so trained to think that only pills and epidurals... all this can give you that kind of comfort. (Andrea, p. 10)

Gisella and Connie concur with this notion of the healing properties of water: "The water is very good for your body" (Gisella, p. 3). Connie compared this birth experience with

her first birth experience at home with respect to the healing properties of water: "But it was a good labour in the water. And I found it much more soothing" (p. 2). For Gisella and Connie, the multiparous participants, their recent birth experience differed from their previous birth experiences because this time they used water in labour. To them, the water made the difference and not necessarily the place of birth. This was Connie's second homebirth.

Dara, Connie and Ingrid found that having a water assisted labour was also very soothing. Dara found the shower to be particularly comforting:

> I was feeling really cold. I was having some uncontrollable shivers. So I felt that it was cold and it just wasn't comfortable for me to be in the tub. The shower got very hot and steamy and that was very comforting for me. (p. 3)

Both Connie and Ingrid found having a facecloth with warm water squeezed over their abdomen by a labour support person very soothing: "I did find that it was much more comforting in the water. Especially with the water being poured over my tummy. That part was the best" (Connie, p. 5). Ingrid found the following technique most helpful for her in labour: They put a facecloth over my stomach and then took a measuring cup actually and poured it over. And the water pouring over felt really good (p. 1).... The water going through the facecloth and feeling it washing over (p. 6).

To conclude, *context, properties, process,* and *attitude* are all needed to understand the influences that affect how a woman perceives her waterbirth experience. *Context* introduced these four major themes since it explained how the participants first heard of waterbirth and what kind of influence this primary source had on their decision

to use water in labour and or birth. *Properties* was examined next because the participants provided information on their perception of the attributes of water that ultimately did influence their birth experience. Third, the participants provided information about personal techniques that facilitated their *process* of labouring in water.
This kind of information is invaluable as it can be used to supplement our knowledge of other techniques that make a waterbirth experience more effective. Fourth, the participants' *attitude* about their waterbirth illustrated how water can facilitate the birth experience. For a summary of the major themes that influence a woman's perception of waterbirth see Table 4-5.

This concludes Part One of this chapter which described four aspects of water that influenced how women perceived their waterbirth experience. Part Two will reflect on the three conditions that need to be considered in order to understand the mechanics of using water.

Table 4-5

Major Themes That Influence A Woman's Perception Of Waterbirth

THEME	KEY CATEGORIES
CONTEXT	*Primary Sources:* *Media* *Midwife* *Birthing films* *Secondary Factors* *Support* *Socialization*
PROPERTIES	*Relaxation* *Comfort* *Energy* *Supportive*
PROCESS	*Focusing* *Visualizing* *Distracting* *Vocalizing*
ATTITUDE	*Pain* *Contraction* *Time* *Healing*

Part Two: Mechanics of Using Water

Three conditions need to be considered if a woman is considering a waterbirth. These three conditions were identified as: *tub/pool characteristics, position*, and *outcomes for the mother and newborn*. Each of these conditions will now be discussed beginning with the type of tub or pool that should be used for labour and or birth.

Tub/ Pool Characteristics

The participants disclosed two concerns with respect to the type of tub or pool a woman may choose to use. Two characteristics should be considered: the size of the tub or pool, and the amount of time required to fill the tub or pool or to adjust the temperature.

Size of the Tub/ Pool. In this study, most of the participants either used a 'kiddie pool' (pool) (see Figure 4-1) or their own bathtub at home (see Figure 4-2). Nine of the participants had the opportunity to labour in a pool. These participants preferred a pool over a bathtub for three reasons. First, they could move around more freely. Second, an air cushion in the bottom of the pool made it more comfortable to sit in. Third, the water level could be much higher in a pool than in a tub.

Andrea commented on the size of a bathtub being a drawback: "The tub is kind of restricting. You can't splash about... no, there's not a lot of room for movement in there" (Andrea, p. 1). It is Dara's contention that a pool should be large enough for a woman to float and not just to be able to move around more freely: "Women (should) labour in a pool like I had ... so that their bodies could really float because I think that that is really

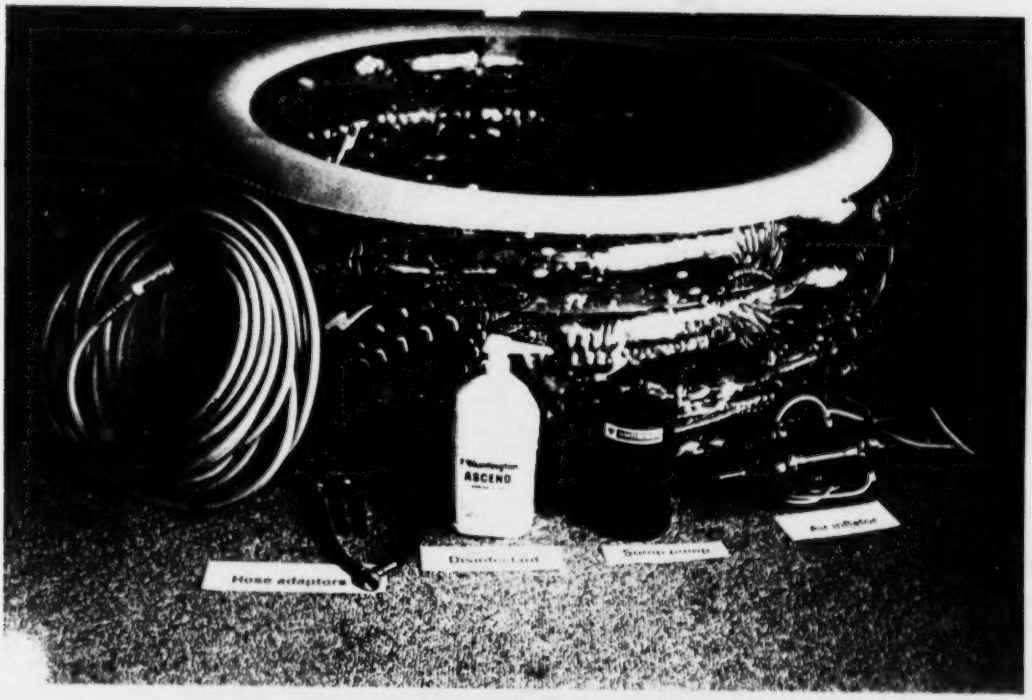

Figure 4-1. A picture of the birthing pool that seven of the participants used in labour and in one case birth. A display of the equipment used to clean, set-up, fill, and empty the birthing pool is also illustrated.

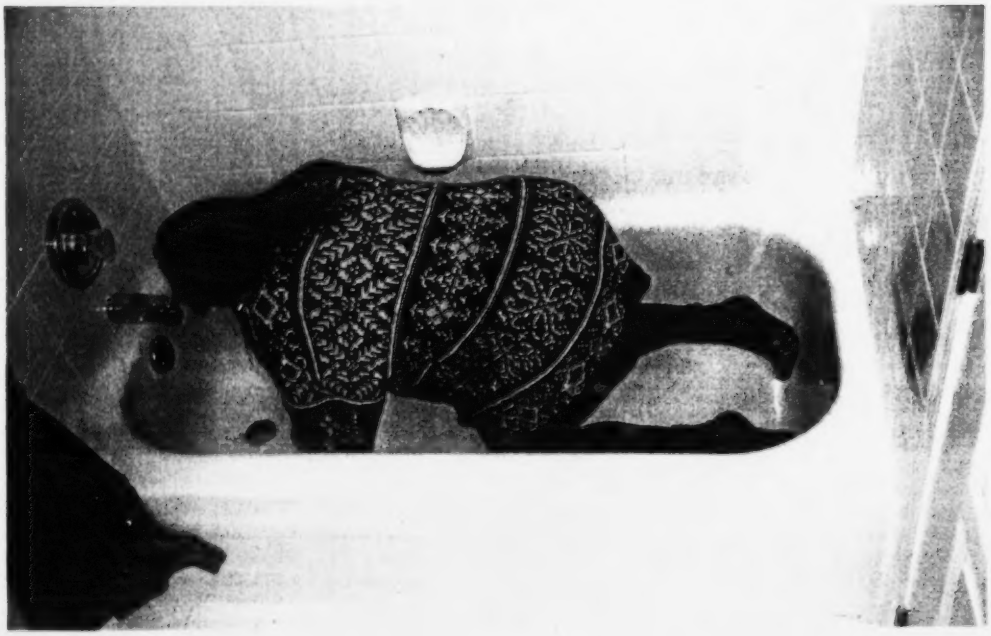

Figure 4-2. The above photograph is a picture of a standard bathtub, with a demonstration of the hands and knees position, that two of the participants used in labour and in one case birth.

Figure 4-3. A demonstration of the sideways (crosslegged) position that one of the participants used in labour.

Figure 4-4. A demonstration of the sitting position that one of the participants used in labour.

the critical part or most of it. By floating, Dara was able "to relax all of (her) muscles" (p. 2).

Elsbeth and Joanne liked the way the pool was designed because it was more comfortable to sit in. They used the same pool that was shown in the Edmonton Journal: "Even the way the (pool) was made (with an air cushion in the bottom that inflates) it was just more comfortable" (Elsbeth, p. 4). Joanne commented, "So just (the) height of it and the bottom was cushioned and it was all nice and warm and it just totally relaxed you" (p. 1).

Joanne found the water level of a bathtub too low to be helpful for a woman in labour. For her, the pool made a difference because it could be filled up higher:

> Well I filled up the tub as much as I could and I mean once you get in it only goes up to my hips you know...like it didn't even cover my stomach. And I was so uncomfortable.... So she set it (pool) up and when I got into it from being in the shower it was just like 'Oh man does this ever feel good' because it wasn't a tub. The water was higher. She (midwife) just had the right temperature and it's like a kids pool. (p. 1)

Gisella and Ingrid laboured 'comfortably' in their bathtub at home. Gisella explains why she preferred to use her bathtub:

> In a shower it is too risky if you fall and it can happen that you hurt the baby or yourself. It's nonsense you need a bathtub. In a bathtub you can shower and lay down. In a shower when you have contractions you can't sit like this not on that little step that is in the shower (p. 10).... They (midwives) pull the pin out, the water is gone, you have new water and so you can mix like you want it. It is so comfortable yet this you will never have with blankets or pillows or stuff like this so this was the best way to do it. (p. 11)

Ingrid also preferred the bathtub to the shower: "It (bathtub) was just really nice.... We

tried the shower with the nozzle and stuff, but I hate that feeling of being half wet" (p. 1).

Elsbeth, Joanne, and Heidi intended to labour in the pool but started in their bathtub or shower because the pool was not ready. As soon as the pool was ready they transferred to the pool. They felt too "confined" in their own bathtubs: "When I first went into labour I got into water in my own tub but it was so confined. I wasn't comfortable in it so I ended up getting out right away" (Elsbeth, p. 2). Joanne also felt uncomfortable and got out straight away: "... and at that time I thought I can't be in the tub it's just too uncomfortable" (p. 1). Heidi was comfortable in her bathtub until the contractions became stronger:

> By night time they (contractions) were getting stronger and (I) spent quite a bit of the night in the bathtub.... They were getting strong enough that just being in the bathtub wasn't helping and then we called the midwife at 5:00 am and she was out here at 5:30 am and she set up the tub right here in the kitchen (p. 3).... The big waterbirth tub was a lot better. (p. 4)

Time Requirements. Connie intended to labour in the pool but did not get the opportunity to do so because it took too long to fill it up. In the end, Connie resorted to the bathtub for labour and birth:

> And I got my husband up a half hour later because I said 'I know that this is labour.' They (contractions) seemed a bit too orderly. And so he got up and started pumping the pool up (with a bicycle pump). And 45 minutes into pumping the pool up ... and so that would make it about 4:30ish ... quarter to 5: 00 am. And the midwife told him he really didn't have a hope of finishing. He might as well come upstairs.... She filled the bathtub up for me and I gave birth in the bathtub because it took too long to fill up that thing (pool). So if you use a pool make sure you fill it up before. And my husband was sweating and had a really good work out. But we didn't get to do it in the pool. (p. 1)

Elsbeth had an opportunity to labour in the pool but not for as long as she wanted

to because of the time needed to fill up the pool:

> When it actually came to using the water, like I said, I went into labour about four so (by) the time they got the tub fixed up it was probably quarter to six I think so I didn't really have much time in the water... not as much time as I wanted to. So it was nice while I was in it (p. 1).... Well we had the automatic one or whatever, the one that plugs in and it still took a good hour to fill that thing with air and water. (p. 6)

Fiona considered using water for one of her previous births but this was not possible for her because there was an insufficient amount of time available to fill and set up the tub:

> I had thought of it for [sibling's] birth but [sibling] ended up being in the middle of winter in the middle of the night. And there wasn't a lot of time to set up.... (With this birth) [midwife] came over and brought over the pool and all the stuff that we needed .... She said "When things start happening you can just set it up' and she showed us how. (p. 1)

Therefore, the amount of time required to fill the tub or pool for labour needs to be considered well in advance before labour begins. The second condition that needs to be considered if a woman is interested in having a waterbirth is *position.*

Position

The participants found the pool very convenient for finding comfortable positions. The freedom to move in a pool facilitated this opportunity. The most commonly used positions in water were: *hands and knees, sitting, floating,* and *lying back.* The least helpful positions were *lying down on the bed* and *squatting.* Dara and Elsbeth tried *lying down on the bed* but it was "terrible" (Dara, p. 2; Elsbeth, p. 2). *Squatting,* according to Andrea, was also not helpful: "At first we put in the birthing stool

too in case I wanted to squat in the water ... but I didn't like that much at all" (p. 3). Andrea was surprised by this because she thought that she "... would want to squat and push down in or ... in that kind of way. But that's not how it worked" (p. 4) *Hands and knees* the most popular position will be discussed first. Followed by, less heavily quoted positions.

Hands and Knees. This position was favored as labour became increasing difficult. If a participant was not already labouring in this position, then she soon moved into a hands and knees position with a contraction: "I did change my position a little bit and I think it was because I was feeling some urges to push.... I would be up on my knees having a contraction and just looking in someone's face" (Andrea, p. 25). Elsbeth alternated between the hands and knees position and the sitting position. She would start in the sitting position and then move into a hands and knees position with a contraction: "I got in the tub and I really... I basically just sat in the tub until I had a contraction and then I just leaned over the side of the tub" (p. 2).

Barbara used variations of the hands and knees position in labour: "I was sort of on my knees and kind of leaning over the edge of the pool. And alternatively to that if my hands weren't comfortable and my arms weren't comfortable I was on my hands and knees" (p. 1). Like Barbara, Heidi found variations of the hands and knees position most beneficial: I was leaning on the one side of the tub. I did that quite a bit between contractions and between pushing.... Sometimes I was on my hands and knees and leaning forward against the edge of the pool" (p. 5).

Connie liked the hands and knees position in labour. Occasionally, she needed to stretch out her legs to give them a break since she was labouring in a bathtub: "I was kneeling in the water so that the bottom of my tummy was in the water. And then I laid back on my arms to stretch my legs out to give it a break" (p. 2). The second most comfortable position while labouring in water was *sitting*.

Sitting. The sitting position was favored in between the contractions when the participants were resting. One of the participants did not find this position helpful until after her baby was born and she was ready to rest:

> I tried sitting but it didn't feel good to sit back.... At that point it was just let's get on with this and get it done and that's why being in that position (hands and knees) helped (Barbara, p. 1).... [Baby] was born and so then I did lay back and was supported with my back. (p. 4)

Andrea and Elsbeth found the sitting position most comfortable in between the contractions: "And then when it was over, we (Andrea and partner) just got right back into the water with the warm water over my shoulder" (p. 8). Elsbeth also rested in the sitting position until a contraction came: "I basically just sat in the tub until I had a contraction and then I just leaned over the side of the tub" (p. 2).

Heidi had a long first labour so all she wanted to do near the end was sit down because she was so tired: "The reason I wanted to do that (sit) was because at that time I (was) so tired that I just wanted to be sitting down" (p. 7). Ingrid and Joanne also felt "most comfortable sitting in the water" (Ingrid, p. 2; Joanne, p. 2). *Floating*, the third favored position will be discussed. Followed by, the *lying back* positions which was least

utilized.

Floating. Both Dara and Andrea found that floating facilitated their labours. For Dara, it became the only way that she could cope with the discomfort of back labour:

> I don't know if I could of endured that (back labour) without the water and the reason for that was that when I was having a contraction what worked for me was to just float. My husband held me, held my hips, so that my body floated and um I was able to relax all of my muscles.... The flotation was what was essential. Ya, that was what was critical for me. My arms could relax and everything. There was just no way that out of water I could relax all of my muscles. I suppose even if I were lying on a bed I couldn't. I tried that, it was terrible. (p. 2)

Andrea used a variation of floating to facilitate labour:

> What I actually liked was being completely held up in the water (p. 3).... I was literally, most of my labour, mostly during the contractions, I was horizontal in the water... kind of floating (p. 4).... I just arched my back up and my feet could brace the sides... and then let that wave kind of lift my body up (p. 8).... I was always sort of buoying myself up into the water at the most intense point. So, what I knew was that I could do this forever. (p. 12)

Lying Back. The *lying back* position was helpful for Gisella and Heidi during labour. For Gisella, lying back was the most comfortable way for her to labour in the bathtub: "They (midwives) had made it quite comfortable for me with a towel around my neck so that I can go like this (lie back) and the midwives hold my head" (p. 4).

Heidi used the lying back position alternately with the hands and knees position: "... and some of the time I was leaning back on the edge of the pool" (p. 5).

Barbara, who laboured and then gave birth in water, utilized this position as soon as the baby was born and brought to the breast:

> [Baby] was born and so then I did lay back and was supported with my back. The back of the pool was supporting my back. That's what I'm trying to say. And she

> was on my belly and we had a towel draped over her and [midwife] kept pouring water over her so that she would stay warm. (p. 4)

Therefore, the kind of position or combination of positions the participant assumes has a significant influence on the level of comfort that is possible while she labours in water. In this study, the participants found the *hands and knees*, *sitting*, *floating*, and *lying back* positions most suitable for a waterbirth. *Lying down on a bed* and *squatting* seemed less efficacious. The third condition that needs to be considered if a woman is interested in having a waterbirth is *maternal* and *newborn outcomes*.

Maternal and Newborn Outcomes

Throughout data collection and analysis, two major themes continuously emerged that were identified as having a significant influence on the participant's outcome from a waterbirth experience. These two themes were *mind set* and whether or not the participant preferred to take a *shower or bath*. Mind set was further differentiated into four key categories: *mind set, warm water immersion, waterbirth*, and *affinity for water*. For newborn outcome, two themes emerged from the data: 1) The *newborn's behaviour* while immersed in water directly following the birth and subsequent baths; and 2) If the newborn had a sibling, the newborn's behaviour during bath time was compared to the *sibling's behaviour* during bath time. To begin, factors which influence maternal outcome will be discussed. Lastly, a discussion of newborn outcomes following a waterbirth experience will be given.

Mind Set. The most significant factor which affects how well a participant will

labour and or give birth is her *mind set* prior to her waterbirth experience. In this study, mind set refers to the positive or negative 'frame of mind' that the participants had towards their labour, birth, and ultimately their waterbirth experience.

One of the participants did not perceive that she had any positive affects from her waterbirth experience. When Kathy was asked what it was like to labour in water, she was not able to focus on her experience of labouring in water. Instead, she wanted to focus on her back labour, and what happened in the hospital. Kathy was not enthusiastic about trying to labour in water for two reasons. First, her family regularly reminded her throughout her pregnancy, and even during early labour, that birth is life-threatening and that all the women in her family "nearly died" in childbirth. This made Kathy feel anxious and fearful about her own impending childbirth. Second, Kathy wanted to go to hospital during labour because she thought she would need a Cesarean like all the other women in her family. Although Kathy articulated an experience that was quite negative overall, it was difficult to ascertain how she responded to labouring in water. From her midwife's perspective, Kathy was progressing well in water (fieldnotes, section 4, p. 9). Since Kathy did not perceive that she had any positive response to labouring in water, compared to the other ten, she was considered to be a negative case. Therefore, Kathy was considered to be a participant who had a negative mind set toward her labour and birth because of these things.

On the other hand, Dara had a similar birth experience to Kathy in that she also had a Cesarean section, but she considered her experience to be still very positive.

Dara's positive mind set towards labour, birth, and using water during labour was evident throughout her labour and birth: "I ended up having a very, very, positive experience. It would have been nice if I didn't have to have a C-section but other than that it was a very positive experience" (p. 5). This view of childbirth was vastly different from Kathy's view of childbirth who exhibited a negative mind set. The other nine participants, including Fiona who was considered a borderline case, had positive mind sets.

Although Fiona found labouring in water to be comforting and relaxing, she did not believe that she could progress if she remained in the water:

> It was really nice and warm and relaxing so I stayed in there for awhile and then decided well I really did want the baby to come out that night so maybe I should get out (p. 2).... And I stayed in there like 15 minutes just waiting for one (contraction), you know, long enough to know there were definitely none coming (p. 3).... My mind wasn't on birth at all. It was just relaxing. It was like getting into a hot tub. (p. 4)

Interestingly, Fiona thought that the reason her contractions had stopped while in water was because the water 'worked too well': "I guess like it depends on how you look at it (water). You could say that it worked too well. Yeah!" (p.4).

The other eight participants also had positive mind sets towards their labour, birth, and waterbirth experience:

> As soon as it (pool) was here everything just felt right. I just finally thought ... yeah, now I can have this baby because I know this (pool) is here and that I will have this water (Andrea, p. 2).... I remember that I had always thought that ... contractions would be easy. I don't know why I thought this, but I kept thinking ah contractions what could those be like (p. 3).... I very quickly I think accepted those contractions rather than fought them off. You know and didn't resist them (p. 23). I didn't want to leave that water. I just didn't want to leave that water.... It was really I think in my mind ... it was the water that let me do the

> vast hard work for such a long time (p. 9).... To me the water... just gave me a lot of strength. (p. 10)

Andrea also gave a good rationale for why using water for labour made sense to her: "I kept telling people '... but don't you feel better if you have an ache and then you go into a hot tub? Yes. Well imagine I'm going to be in one big ache'" (p. 25).

Like Andrea, Barbara also had a positive mind set even before labour started:

> We had bought it (pool) so that I could labour in it. That had been my intention so all of my own psyching up just prior to the birth involved labouring in this pool. So for me even though the business at hand (labour) had really started before I climbed into the pool, in a way I really knew it was going to happen when I climbed into the pool (p. 3).... I just took the tack that I was excited about this pool and that I wanted to labour in it because water just helps (sic) me so much in my first birth. (p. 4).

Connie provides an example of how water influenced how she thought about her contractions:

> With [older child]... I don't think I really understood to go with the contractions. I think I fought the contractions all the way through. It wasn't until [newborn] and in the water that I finally worked with them instead of fighting them. (p. 4)

In this final example, Ingrid describes what her mind set with her first birth compared to this second birth experience:

> I had it in my mind that I was going to relax and I was going to do well you know. With [first birth] my idea of before labour was that I was going to grit my teeth and get through it. And with [this birth] my idea was that I was going to surrender to it (p. 5).... To me it was a lot more mental and then I thought no I can do this (labour) and it was going really well. (p. 6)

The participants who portrayed a positive mind set perceived that their labour and birth experience was positive. If the participant perceived that using water would

facilitate her labour, then the water seemed to fulfill that expectation. *Warm water immersion,* the second key category of the major theme mind set will now be discussed.

Warm Water Immersion. Two of the participants, Andrea and Barbara, initially intended to labour only in water. During labour, they changed their minds and decided they would like to give birth in water as well. In the end, only Barbara was able to give birth in water and not Andrea:

> And I got out and one contraction and I got just right back in there! (Andrea, p. 6). I mean it was just a second, you know. I didn't want to be out of that water. So there was just a moment when I thought ... well, oh I better get out of the water (for birth). I think that might have been partly because a lot of the women on the video and I also know from the woman who I borrowed the tub from that she laboured in water. But when it came time to actually have the baby, she wanted to be on all fours. And so she got out. And she didn't want him to be underwater. I've heard that from a couple of people.... And since we were in the pushing phase, I guess part of my mind was saying that I've got to get out now. (p. 7)

> It was in labour. I had expected to labour in water but would climb out and perhaps use the birthing chair or birthing stool and use other positions. My main interest was to follow my body on this one and um find the position that I wanted to be in to give birth.... I suppose that in my mind I'd thought that, you know, there was a possibility that this would be a waterbirth and that didn't um frighten me or anything. I really like water a lot so that was a comforting thing for me to think but I just sort of expected that I would get out.... And when the time came, I just couldn't imagine climbing out of the pool. (Barbara, p. 1)

Kathy, Ingrid, and Joanne did not plan to use water in labour but decided to give it a try upon their midwife's suggestion. Of these three participants, all of them only laboured in water. Ingrid planned to get out of the water for birth:

> But I was nervous, I didn't want to do a waterbirth so um I wanted to get out before it got any worse like I didn't want to go to the tub when I needed to push (p. 5).... Then I got out and did the rest of the labour and then he was born on the birthing stool at the foot of the bed (p. 2)

Joanne had similar reservations about birthing the baby in water:

> So it wasn't really something that I had planned (p. 1).... As for actually having the delivery in the water, um ... I never imagined that I would push and have this baby in the water. It was never something that I looked at doing but using the water during it I kind of thought of it. (p. 7)

After using water for labour and in one case birth, four of the participants plan to use water with their next birth (Andrea, p. 1; Barbara, p. 1; Ingrid, p. 5; Joanne, p. 10). Kathy, who was considered a negative case in this study, was not certain as to whether or not she would labour again in water (fieldnotes, section 4, p. 9).

Waterbirth. Six of the participants wanted to labour and then give birth in the water (Connie, p. 1; Elsbeth, p. 3; Fiona, fieldnotes, section 'F'; Gisella, p. 1; Heidi, p. 2; Dara; p. 5). Of these six participants only Gisella was able to birth her baby in water because of concerns that arose during labour: "We (Gisella and partner) find (sic) the conclusion that, because I was pregnant, that I should do it the way I preferred and therefore I decide to do it by waterbirth" (p. 1). Gisella's baby was born by quick emergence and did not float around in the water for a while at birth (Gisella, p. 3).

Heidi was one of the participants who intended to give birth in water, but in the end did not have this opportunity:

> Well in the end [baby] wasn't born in the water because I had been pushing for quite a while and she wasn't coming out so the midwife suggested getting out of the pool and getting into the squatting position (p. 6).... She wasn't born in the water but um that wasn't because I had decided that I definitely didn't want her born in the water. It was just the way it happened. (p. 7)

Dara also looked forward to labouring and then giving birth to her baby in water;

however she was not able to fulfill this intention completely because of concerns that arose during labour:

> Waterbirthing... I was looking toward actually birthing the baby in water. I didn't know how that would go. I did think that it would help me in terms of labour and it did a lot. Unfortunately though, I couldn't stay in it; I don't know how I could have. (p. 3)

For these six participants, only one was actually able to labour and then give birth in water as planned. Two of the participants, who are interested in having more children, stated that they would like to labour and give birth in water with the next birth if possible (Elsbeth, p. 5; Dara, p. 5).

Affinity for Water. In this study, *affinity for water* refers to the participants who love water in every way. One of the participants considered herself a 'water person' because she loves water and feels drawn to it: "... especially if you're a 'water person'. I've always been a bath person so the water really helped that point (wanting a waterbirth) I guess" (Elsbeth, p. 4). Andrea, Barbara, and Gisella also described themselves as being a 'water person':

> I just felt very drawn to it, and I have always liked swimming and went swimming when I was pregnant. It just made all the sense that I would feel more comfortable in the water. So I thought, yeah ... you know, like let's try that (waterbirth). (Andrea, p. 1)

Like Andrea, Barbara went swimming while she was pregnant and said that she feels 'very at home in water':

> We would go to the Mill Woods wave pool and I would be a beluga. And it was just so nice in those waves because when I was pregnant the first time and trying to imagine what labour would feel like and you hear stories of it being like waves I thought, 'Well, this is a good sort of physical analogy for me to be in these

> waves and just sort of work with them'.... Something about the rhythm and the waves were really enjoyable for me and I think that is why it just translated well.... When I was pregnant with [this baby] I wanted to touch base with the water again and experiencing labour as waves (p. 7).... I really like water a lot so that (waterbirth) was a comforting thing for me (p. 1).... I feel very at home in water. (p. 7)

Gisella also commented that she 'loves water in every way': "I have tried to do this in [European country] before because I know that I am a person who loves water in every way" (p. 1). On the other hand, Joanne who enjoyed labouring in the water, was the only participant who was not naturally drawn to water: "When I'm in the swimming pool the mass of water ... I have a hard time going up to my neck because it's just so much pressure on my chest I can't breathe" (p. 4).

Of the four participants who felt drawn to water, two laboured well in water (Andrea, Elsbeth) and two gave birth in water (Barbara, Gisella). One of the participants, who did not feel drawn to water still found that labouring in water was helpful for her and intends to labour in water if she has more children (Joanne, p. 10). With respect to labouring women in the future, Andrea and Gisella suggested that women should at least try labouring in water because it facilitated their labours so greatly unless they have an 'aversion' or feel uncomfortable in water:

> And I would think that anyone in their right mind should have water... (unless) they feel that they have some personal aversion to water. I think that it (waterbirth) really helps you to do that. That was my experience anyway. And that is why I could do what I did. (Andrea, p. 23)

> This is a moment when you are not comfortable like in other times so I would make it easiest way that I could do it and I know for sure for me that it is water (Gisella, p. 1).... It doesn't hurt that much like before (with first birth) so I would

> advise other women when they feel comfortable in water to do it the same way. (p. 4)

Shower or Bath Preference. Nine of the eleven participants commented on whether or not they prefer to take a shower or a bath. Connie and Kathy did not mention their preference during the interview.

Interestingly, all but one of the participants who intended to labour and give birth in water preferred to take baths (Andrea, p. 1; Barbara, 8; Dara, fieldnotes, section 4, p. 2; Elsbeth, p. 4; Gisella, p. 7; Heidi, p. 2). The one participant, who intended to labour and give birth in water, was Fiona. Fiona needed to come out of the pool because her contractions seemed to stop in the water. She called herself a "shower person" (p. 4).

The remaining two participants, Ingrid and Joanne, agreed to try and labour in water upon their midwife's suggestion. Both of them did not consider themselves to be 'bath persons': "I'm also not very much of a tub person, so I actually wasn't really all that comfortable" (Ingrid, p. 2). Joanne felt the same as Ingrid: "I'm not a bath person" (p. 1).

On the whole, participants who considered themselves to be 'bath persons' found waterbirth efficacious. Fiona, who was considered a 'borderline' case in this study because the water affected her contractions differently from the other ten participants, preferred to take showers. The two other participants who considered themselves 'shower persons' were less enthusiastic about their waterbirth experience compared to the 'bath persons' in this study.

Newborn Outcomes

During the interviews, two themes emerged. These themes were: 1) The *newborn's behaviour* while immersed in water directly following the birth and subsequent baths; and 2) If the newborn had a sibling, the newborn's behaviour during bath time compared to the *sibling's behaviour* during bath time.

Newborn Behaviour. Four of the participants provided rich examples of how their newborns responded to water. The newborns whose mothers used water during labour, and in one case birth, seemed to really enjoy the water:

> Mary likes her bath a lot (Barbara, p. 7).... When she was just three days old and she was in the big bathtub with me ... she remembered the water.... She hadn't startled for the first few days of her life. She was very calm, a very calm baby.... when I climbed into the bath with her, and again she was only three or maybe four days old. She opened right up. There was no startle reflex ... her arms opened right up and her eyes got really big and quiet and she was making 'O' formations with her lips. It was just the wide open arms just completely relaxed. (p. 8)

Dara commented that her newborn is "very relaxed" (p. 6). Joanne found the same reaction from her newborn:

> He loves it.... He just sits there and is all submerged in the water. He doesn't cry or anything. He just loves his baths and I love giving it to him.... So he likes the water.... He is just totally relaxed in water. (p. 6)

It is Elsbeth's contention that her newborn is more 'alert and happy' for two reasons. First, she had no analgesics during labour. Second, the 'warmth of the water must have been like what it was like to be inside (womb)':

> I think that Julie was more alert and more happy because I didn't use any of that stuff (p. 2).... We got out of the water and then we got back in again after that was nice for her because we got back in again and she just floated... She was

> really relaxed. Especially the warmth of the water must have been like what it was like to be inside and stuff so it was nice to be back in the water.... Oh she relaxed. She just closed her eyes. Even now when Julie has a bath she just totally relaxes (p. 3).... I take her into my own tub... Julie goes to sleep and ... just floats ... and [newborn] just really enjoys the water. (Elsbeth, p. 4)

Sibling Behaviour. Three of the seven multiparous participants compared the newborn's behaviour during bath time with the *sibling's behaviour* during bath time. Of these three participants, one felt that there was no difference between the sibling's behaviour and the newborn's behaviour during bath time: "Interestingly enough both of these two really seem to like water. John really likes water" (Barbara, p. 7).

The other two multiparous participants found that there was a significant difference between the sibling's behaviour and the newborn's behaviour during bath time. The siblings never enjoyed their baths: "I don't know if that has anything to do with being back in the water right after birth again or not but the other two sure aren't like that" (Elsbeth, p. 3). Joanne found a similar response with her older child: "Carrie hated her baths. Carrie screamed her head off.... And Carrie was just always nervous and screaming.... Before I used to get so tense because Carrie used to scream like a little billy goat and ... just hated it" (p. 6).

To conclude, three conditions need to be considered if a woman is considering a waterbirth: *tub/pool characteristics, position,* and *maternal and newborn outcomes. Tub/ pool characteristics* introduced these three conditions because the size of the tub/ pool and the time required to fill the tub or pool need to be considered first. With respect to the size of the tub/ pool to labour in, the participants found three criteria to be helpful

when choosing a tub or pool. First, they want to be able to move around freely. Second, they want an air cushion in the bottom of the pool for increased comfort. Third, the water level must be able to get high enough for immersion. Finally, in order to prevent disappointment the participants recommend that the pool be inflated before labour begins if you are not using a vacumn pump. If a vacumn pump is available, the pool can be filled up once labour begins.

The second condition that needs to be considered is *position.* The participants enjoyed labouring in a pool because they could find a comfortable position while in water. The freedom to move in a pool facilitated this opportunity. The most comfortable positions in water were: *hands and knees, sitting, floating,* and *lying back.* The least helpful positions were *lying down on the bed* and *squatting.*

The third condition was *maternal and newborn outcomes. Maternal outcomes* are important for assessing which women may be best suited for labouring and or birthing in water. The following factors had a significant influence on the participant's outcome from a waterbirth experience. These were *mind set* and whether or not the participant preferred to take a *shower or bath.* A positive mind set was particularly important for the participant to have a favorable experience. If the participants had an 'affinity for water' this was considered an asset. It did not seem to make a great difference if the participant favored warm water immersion or birthing in water. In the end, the participants often changed their minds about either labouring or birthing in water while in labour.

Although there was less data available on the *newborn outcomes* compared to

maternal outcomes, it was interesting to address the differences that were noted. The section on *newborn outcome* was divided into two parts: newborn behaviour, and sibling behaviour. The participants described their newborns in the following way when they were in water: 'really liked water', relaxed, alert, and happy. Of the few multiparous participants who commented on the sibling's behaviour compared with the newborn's behaviour during bath time, all but one of the participants commented in this way: The siblings reacted 'very differently' in the water; they 'hated' their bath time compared to their siblings birthed in water.

V. CONCLUSION, DISCUSSION & IMPLICATIONS

CONCLUSIONS

The purpose in this study was to discover what it was like for women to labour in water. The researcher's goal was to expand current information and knowledge available in the area of using water in labour and or birth so that a change in the care of women in labour would ensue if waterbirth was indeed efficacious. Since little empirical knowledge exists on the psychological impact of labouring in water, an exploratory, descriptive design using ethnographic methods was employed to answer the research question. The findings indicated that women's perception of their waterbirth experience is affected by two key influential areas: aspects of using water, and mechanics of using water. Common as well as significant and unique findings were attributed to women who used water in labour. Findings that were common to what was reported in the literature were related to the themes, *properties, attitude, tub/pool characteristics, position,* and *newborn outcomes*. Findings that were less common and seemed unique to this study were: *context,* each participant's *process* of labouring in water, and *maternal outcome*.

The findings from this study suggest that having water available for labouring women appears important for five reasons. First, women who choose to labour in water perceived that their time in water was different and more beneficial compared to their time labouring out of water. They reported feelings of relaxation, comfort, energy, and support from being in the water. Second, they found that the water helped them to focus on their labour and in some cases facilitated their ability to visualize, vocalize, and be

distracted. This in turn helped them to cope with the increasing intensity and demands of labour. Third, the women found that their perception of pain was decreased in water; their contractions in the water were as painful but more manageable and bearable in water than on 'land'; their labours were perceived as 'quick' compared to the actual labour time recorded by their caregivers; and the water was perceived as having healing qualities by some of the women.

Fourth, women who choose to labour in water experience no complications related to their use of water in labour and or birth. Of the eleven women in the study, nine were able to labour and or give birth without any complications or need of obstetrical intervention. Two of the women required a Ceasarian section for reasons that were unrelated to the use of water. However, one of the participants who had a Ceasarian section with her first birth for a baby with a posterior presentation did not require the same procedure; she was able to find comfortable positions in water, which she believed facilitated a more favorable presentation of the baby at birth. Fifth, with respect to newborn outcomes following a waterbirth, the newborns were recognized by their mothers as being more alert, happy, relaxed, and enjoying water compared to their siblings whose birth had nothing to do with water. In addition, these siblings also hated their baths. Although water had a significant impact on the women in this study, it is important that certain limitations be considered.

Limitations of the Study

Four limitations were identified in this study. The participants were volunteers who were quite homogeneous as a group, most of the experiences were homebirths, only two of the multigravidas had a previous homebirth experience, and initially the participants all had midwife attended births.

First, the participants were volunteers which carries with it the risk of potential bias. Despite this fact, the participants had diverse childbirth experiences, with seven of the eleven participants being multigravidas. One advantage to having a fairly equal number of primigravidas to multigravidas is that the primigravidas were able to give their perception of their waterbirth without any bias. In addition, the participants were quite homogeneous as a group. This factor may limit the research findings to women who are highly motivated and prepared to plan and arrange a waterbirth, which is considered quite a new practice in Canada, in a home or hospital setting.

Second, most of the experiences were homebirths, with only three hospital births of which two had intended to give birth at home. Of these three hospital births, only one was a planned hospital waterbirth. The findings from this study are mainly applicable to homebirth and not hospital birth sites. However, waterbirth is a relatively innovative option in Canada. If a women is planning to have a waterbirth, then she will most likely have one at home since having a waterbirth in the hospital setting is only just beginning to occur. In this case, the sample for this study is representative of the current population of women having waterbirths. As waterbirths increase in the hospital setting, research

will be needed to determine if women who have hospital waterbirths have an experience similar to the women in this study.

Third, only two of the multigravidas had a previous homebirth experience, with the majority having a previous hospital birth experience the first time. Since this is the case, it may be difficult to discern if the waterbirth experience at home was being compared to an unsatisfactory previous hospital birth experience.

Finally, the participants all had midwife attended births initially. This may be indicative of the needs of the current population of women interested in having the option of a waterbirth since most waterbirths are managed by midwives at this present time.

DISCUSSION

The purpose in the remainder of this chapter is to discuss the study in relation to: the efficacy of the method for data collection and analysis, commonalities in the findings between this study and relevant research literature, findings that were unique and significant, and implications of the findings for nursing/ midwifery practice and education will be given with suggestions for further research.

Discussion of Research Method

The use of an exploratory descriptive design fostered the emergence of the emic perspective on the psychological outcomes from waterbirth. This design was most appropriate for the research question and the phenomena being studied. By employing this design, seven major themes emerged from the data that eventually lead to two significant influences that affect women's perception of their waterbirth

experience. Although each woman and her family perceived their experience as unique, common themes were unmasked and revealed.

Having a non-probability, purposeful sample resulted in an adequate and appropriate sample of women's experience of waterbirth. The sample seemed to develop steadily by word-of-mouth from the woman's midwife, and through the information sheet that was made available at the clinic for potential volunteers who would be interested in contacting the researcher for more information. As a result, most of the participants heard about the study through their midwives who then suggested they contact the researcher at the given number for more information. Each of the women who volunteered for the study was able to contact the researcher on their first attempt without having to leave a message on an answering machine. This simple fact seemed to make a difference. Three women, who were interested in obtaining more information about the study, got an answering machine on their first attempt to call the researcher. As soon as the message was retrieved and immediately followed up by the researcher, a message was left for the potential participant but the call was usually not returned.

After analyzing the characteristics of the women, variations were noted; however, the women were quite homogeneous in so far as these characteristics: marital status, place of birth, first homebirth experience, and labouring only in water. The women differed in their ages, birth experience, and employment status. All the participants were similar with respect to three important characteristics: they were all highly motivated, articulate, and relatively well-informed on labour and birth.

Before beginning the face to face tape-recorded interviews, the researcher and participant, and in some cases her immediate family members, engaged in a casual conversation about their pregnancies, births, and child-raising experiences. Stories of childbirth and raising children were often exchanged and this seemed to make the meeting more conducive to sharing private feelings and thoughts towards her recent waterbirth experience. This casual introduction usually lasted between 30 to 45 minutes and facilitated a collection of thick and rich data during an interview session. The introduction also allowed for the open-ended structure of the interview to be relatively focused on the emic experience of waterbirth since we had already shared other parts of her story that were not necessarily associated with waterbirth and how water made a difference. Following an interview session, the participant often told the researcher that she was pleased to tell her story to someone who was interested in listening and who did not judge whether it was a wise and safe idea to have a waterbirth and or to give birth at home instead of in a hospital.

Confidentiality of participation and of the taped-interviews, transcripts, visual analogue scale and demographic data questionnaires were carefully maintained throughout the research process. No known breaches of confidentiality occurred during the study. However, there was one participant who expressed a concern over the Information Letter (see Appendix C) and the Informed Consent Form (see Appendix D). This participant was concerned over the section on the letter and form which discussed the researcher's obligation to report any evidence of child abuse. She wanted to

know what the researcher considered as child abuse. She wanted to know specifically if "giving a spanking to a three year old with a diapered bottom who was disobedient" was child abuse. The participant explained her concerns in a story that recently happened to one of her friends:

> I love my children and would never hurt them. I have given my son a spanking on the backside before... My girl friend was reported for child abuse by another friend when she was in her own home (she spanked her child). This was a mother of four (children) who was reported. Apparently, '... all the authorities came up to her house'. (fieldnotes, section 'C', p. 2-3)

The participant was thanked by the researcher for bringing forth her concern. The researcher then reassured the participant that she did not consider 'spanking a three year old child with a diapered bottom who was disobedient' to be child abuse. After the discussion, the participant felt comfortable to continue on with no tension noticed by the researcher during the interview session.

Discussion of Findings

This part of the chapter will highlight findings that were common to what was reported in the literature, followed by findings that were less common and considered unique to this study. Themes that were heavily cited in the research literature, *properties, attitude, tub/ pool characteristics, position,* and *newborn outcomes,* will be discussed first. Next, the unique findings of this study, *context,* each participant's *process* of labouring in water, and *maternal outcome,* will be related to the few other existing studies in these areas.

Universal Findings

Discussions of the *properties* of water, *attitude* towards the affect of water, *tub/ pool characteristics, position,* and *newborn outcomes* following a waterbirth are prevalent throughout the literature. With respect to the *properties* of water, *relaxation, comfort,* and *support* from water are the most commonly reported attributes. *Energy,* another advantageous attribute that results from labouring in water, was less heavily referred to in the literature.

Properties. During pregnancy, women frequently used the bath to soothe any physical and or emotional discomforts. It is interesting to note Rosenthal's comment, "pregnant women rarely ask why one would use a bath in labour, physicians usually do" (Rosenthal, 1989, p. 170). One can question whether this is due to a difference in the value placed on bathing by men and by women. Do women generally perceive a bath to be a way of relaxing? It is evident that labouring women understand the value of having a warm bath.

According to many authors (Attwood & Lewis, 1994; Balaskas & Gordon, 1992; Brown, 1982; Church, 1989; Daniels, 1989; Harper, 1994; Jepson, 1989; Lenstrup et al., 1987; Lichy & Herzberg, 1993; Moysa, 1995; Odent, 1994; Rosenthal, 1991), baths during labour facilitate deep relaxation and comfort because the labouring woman's weight can be supported by warm water. If a labouring woman's weight is supported by water, then she feels 'weightless'. If she feels weightless, then her muscles will be less tense, she will perceive less pain, and will have freedom to move. Therefore, if she feels

less tension, pain, and has freedom of movement, she will have more *energy* to carry her through labour (see Table 4-3).

The findings from this study indicate that women acquire direct and indirect benefits from labouring in water. With respect to outcomes of energy, the water gives them the commitment and endurance they need to confront labour. Balaskas and Gordon (1992) concur with this point:

> Water can help enormously to conserve energy because it may shorten your labour and also support your weight so that your energy can be optimally used.... Immersion in water will reduce your fluid requirements because it is slowly absorbed through your skin. (p. 92)

Naturally, if the labouring women feels relaxed, comforted, and supported by the water, she will have more opportunity to rest and reserve her energy for the 'exertion of giving birth' (Brown, 1982; Rosenthal, 1991). Moreover, Kitzinger (1978) feels that labouring in water refreshes the woman in labour. With this in mind, perhaps labouring in water would be particularly beneficial for women whose labours are long or arduous. It is Odent's contention that women experiencing long and arduous labours do in fact labour well in water and often give birth to their baby soon after entering the bath (cited in Daniels, 1989). Perhaps then it is the woman's perception of how the water will work for her that in fact determines the success or failure of her waterbirth experience.

Attitude. The labouring woman's attitude toward water will have a powerful affect on how she perceives her *pain* and *contractions* during labour. This in turn seems to affect her perception of *time* in labour -- how quickly she feels she is progressing. If

the labouring woman perceives that her labour is less painful in water, that her contractions are more tolerable and manageable, and that her labour is progressing quickly, then she often feels that the water was soothing and *healing* because it allowed her to work well. *Pain, contractions,* and *time* were referred to frequently in the literature that was reviewed. Although healing was mentioned less frequently in the childbirth literature (Attwood & Lewis, 1994; Brown, 1982; Daniels, 1989), it was well documented in studies that examined the healing properties of water (Cayleff, 1987; Cullen, 1807; Donegan, 1986; Lovering, 1905; Rossiter, 1913; Woloch, 1992).

Women who labour in water often describe their intense physical feelings as 'work' and not necessarily *pain.* It seems that they referred to pain as work if they were in good control of their labour. If women began to feel 'out of control' or felt that their labour was no longer progressing, then they described their intense physical feelings as pain. The women who laboured in water did not express any need for analgesia even when assessed by their midwife as having very strong contractions. A need for analgesia was expressed only when three of the women needed to get out of water to go to the hospital. One of the three women expressed that she was having stronger contractions when she was in the water, but felt she could cope better with the contractions then compared to when she was out of water and in the hospital. This could be a physiological advantage to labouring in water; however, more research is needed to address the generality of the nature of this finding.

Initially, this finding seems to imply that women who labour in water experience

less pain than women who labour without water (Burke & Kilfoyle, 1995; Church, 1989; Kamayani, 1989). However, women who labour in water do not necessarily experience less pain; instead, what they are likely experiencing is an altered perception of pain. This phenomenon of water altering the perception of pain for women in labour was found in other studies (Balaskas & Gordon, 1992; Brown, 1982; Lenstrup et al., 1987; Lichy & Herzberg, 1993; Rosenthal, 1991). To understand this better, it is helpful to recall Melzack and Wall's (1965) gate control theory of pain.

Melzack and Wall (1965) found that the transmission of painful impulses to a conscious level of awareness, in this case labour pains, can be altered by a gating mechanism which is believed to be located at the spinal cord level of the central nervous system. In order to achieve a decreased perception of pain, the gate must be closed or partially closed. Closure of this gating mechanism can be achieved in one of three ways: through activity by the *large diameter nerve fibers* (water), inhibitory impulses from the *brainstem* (focusing, distracting, visualizing, vocalizing), and through inhibitory impulses from the cerebral cortex and thalamus (mind set). The first mode of closure is most relevant to this present discussion and will be described first. The remaining two modes will be described later with *process* and *maternal outcomes*.

In the gate control theory it is proposed that the gating mechanism can be controlled with the *large diameter nerve fibers* through cutaneous stimulation. Thus, water has the potential of altering women's perception of pain because skin is enriched with numerous large diameter nerve fibers. Therefore, it is conceivable that once these

large diameter nerve fibers come into contact with water the gate may begin to close with the end result of the labouring woman perceiving less pain with her *contractions*. It may well be that a change in the perception of pain leads to increased tolerance of the pain. In turn this may lead to a greater ability to focus on the labour.

Some women who labour in water perceive that their *contractions* are easier to accept and seem to pass more quickly compared to when they laboured on 'land'. First, the contractions seem easier to accept because of the nature of water and the properties of water. If women feel 'weightless' in the pool, then it is easier to support their bodies. If it is easier to support their bodies, then they feel more able to accept and endure the forthcoming contractions. Second, if women feel deeply relaxed, and in some cases asleep, in between the contractions, then this phenomenon will also facilitate women's endurance and acceptance of contractions. These findings were commonly cited in other studies that examined the effect that water has on contractions (Attwood & Lewis, 1994; Brown, 1982; Church, 1989; Kamayani, 1989). Although water seems to have a significant influence on how women cope with their contractions, some women found that this was not the case.

Occasionally, a woman may find that using water in labour may inhibit her contractions or cause them to slow down. There was one participant who had this experience in this study. In this case, it seems that the water makes contractions less efficient once the woman enters the tub or pool. If this happens, then it is best for the labouring woman to leave the pool and walk or use a supported squat position on land

(Balaskas & Gordon, 1992; Church, 1989; Rosenthal, 1991). On the other hand, studies indicate that this inefficiency of contractions may be eliminated altogether if the woman enters the pool at the 'right *time*'.

The findings indicate that a woman has entered the pool at the 'right *time*' if her labour seems to be progressing efficiently rather than inefficiently. If a woman's labour is not progressing efficiently, then she has most likely entered the pool before her cervix was at least five centimetres dilated (Church, 1989; Jepson, 1989; M. Renfrew, personal communication, October 7, 1995). Interestingly, women often perceive that their labour in water was significantly shorter compared to the documented 'real' time. This finding seems related to how women perceived their pain and contractions while labouring in water. If they perceived that their labours were less painful and that their contractions were efficient and manageable, then labour seemed to progress well and quickly in water.

Not only do women's perception of their experience of pain and contractions in water affect their perception of *time*, but also the properties of water seem to have an effect on how quickly labour will progress. For instance, women who labour in water benefit from the warmth of the water which facilitates relaxation and stretching of the cervix. Other studies present similar conclusions (Burke & Kilfoyle, 1995; Brown, 1982; Daniels, 1989; Jackson, Corsaro, Niles, Stange, & Haber, 1989; Lenstrup et al., 1987; Odent, 1983).

Although water seems to have a significant effect on the labouring woman's attitude toward *contractions*, perceived *time*, and *pain*, based on the findings from this

study and others, there was one study that did not come to these conclusions: "Water immersion did not alter the rate of cervical dilation, change the contraction pattern, change the length of labour, or alter the use of analgesia" (Schorn, McAllister, & Blanco, 1993). However, these findings were based on a small sample of 93 women. Both the water immersion group and the control group used analgesics for pain relief. Analgesics may have had an influence on their findings. In addition, the participants in the warm water immersion group were able to enter the water at any time. If a participant entered the pool before her cervix was 5 cm dilated, then her progression of labour would likely be inhibited since her contractions would be less efficient or could stop. Within the childbirth literature, few studies discussed the labouring woman's attitude toward the *healing* properties of water.

Healing referred to how the warm water was soothing and comforting for women in labour. The warm water seems to exert a soothing force on a labouring women that makes her feel as though her body is responding to the healing attributes of the warm water. For some labouring women, water facilitates a sense of physical, emotional, and spiritual renewal (Attwood & Lewis, 1994; Brown, 1982; Daniels, 1989). Daniels (1989) comments: "Warm water is so soothing ... it comforts the woman and helps her cooperate with her own body, so that she can open up more easily, both physically and spiritually, facilitating a natural birth" (p. 200).

Water seems to naturally exert a healing or soothing action on the skin. First, labouring women express relief when they see a birthing pool filled with warm water. For

them, water seems to be a medium that gives them strength and rejuvenates their soul even before they enter the pool. Second, once a labouring woman enters a pool of warm water she experiences vasodilation. Vasodilation facilitates muscular relaxation which in turn helps her to cooperate with her body so that she can 'open up' more easily. Third, by labouring in the pool, the warm water seems to have a soothing affect on the perineum that facilitates tissue stretching and relaxation in preparation for the impending birth. Together, these effects of water promote healing for women who use a birthing pool since less intervention is required.

Tub/ Pool Characteristics. Two important conditions were found to be significant with respect to the type of tub or pool a women is planning to labour and or give birth in: the size of the tub or pool, and the amount of time required to fill or adjust the temperature of the tub or pool.

Most women seem to prefer a birthing pool over a standard size bathtub (see Figure 1) for three reasons: freedom of movement, increased comfort, and a higher water level. Other authors also agree that the size of the pool is significant (Jepson, 1989; Lichy & Herzberg, 1993; Rosenthal, 1991). Rosenthal (1991) comments:

> The capacity should be sufficient to allow the woman to change position easily. The greater size contributes to temperature stability over longer periods of time, and affords birth attendants easy access to the mother and the newborn should birth occur in the (pool). (p. 47)

However, it is important to note that 'bigger' does not necessarily mean 'better'. To illustrate this point, the advantages and disadvantages of three commonly used birthing

'pools' will be described.

Some women find that using an ordinary or standard sized bathtub is satisfactory. Labouring in a bathtub does have certain advantages. For example, some women find that the bathtub is 'cosy', easy to warm up or cool down quickly, and easy to empty since all that is needed is to have the plug pulled. On the other hand, a bathtub limits the labouring woman's freedom of movement and is often too shallow to provide some beneficial attributes of water such as buoyancy. However, a bathtub is 'better than nothing'. Lichy and Herzberg (1993) suggest that a bathtub has an advantage over a jacuzzi because you can sit sideways with legs crossed so that the back can be supported by the straight side.

Initially, a jacuzzi may seem like the ideal unit to give birth in because of the obvious advantage of freedom of movement. Some women find that a jacuzzi is best since it allows for full body floatation thus facilitating total muscle relaxation. In reality, however, there are serious disadvantages that must be considered:

> In practice, it tends to be too slippery, too shallow and too small and women complain that it is uncomfortable, restricting them to a semi-reclining position. The noise and force of bubbling water can also be distracting.... A more serious disadvantage of a jacuzzi is the increased risk of infection due to problems in keeping the re-circulating water free of bacteria. (Lichy & Herzberg, 1993, p.132)

If a jacuzzi is the only unit available to the women for labour and birth, then it would be advisable to: leave the jets off, ensure that the jacuzzi is thoroughly clean, use a birthing stool, or have a labour support person available.

The most recommended type of birthing pool is a 'kiddie pool' or manufactured birthing tub. The 'kiddie pool' is popular because it is portable, allows for complete

submersion, unrestricted movement, and has an air cushion built into the floor of the pool that provides for extra comfort. This type of pool is also inexpensive, approximately thirty dollars, and can easily be purchased if a pool is not available where the woman plans to labour and or give birth. A disadvantage to this type of pool is that it takes hours to fill without a special pump. If no special pump is available (see Figure 1), then women, who planned to use this type of pool and could not because it was not ready, recommend that it be inflated at least two weeks prior to the expected date of confinement. Emptying or adjusting the temperature of the pool is more complicated, but manageable, since a network of 'washing machine' hoses is needed to either siphon out water or add in water as needed.

Like the 'kiddie pool', a manufactured birthing tub allows for complete submersion and unrestricted movement. It also has more room for a labour support person to be in the tub as well if this is desired. However, this type of pool is very costly, with a price range between several hundred to several thousand dollars to purchase, and must be specially ordered from the United States or England. In addition, one midwife claimed that it is more difficult to clean out this type of large tub.

The second condition to consider when choosing the appropriate type of pool is the amount of time required to fill or adjust the temperature of the pool. Although some would argue that it is not difficult to adjust the water temperature, water can be bailed out with a pitcher with more water easily added, it is still an important consideration:

> The water temperature must be maintained as near to 37-38 degrees centigrade as possible. Any significant change from the baby's norm can stimulate breathing. If

> the water is too cold it can shock the baby, and both mother and child will need more oxygen and energy to warm themselves. If the water is too hot, the woman may tire and increased perfusion of blood to the skin may compromise the fetus. (Jepson, 1989, p. 74)

No research to date has been done that specifically identifies the facts of water temperature. Consequently, there is no empirical evidence to support that a cold water temperature may suddenly stimulate the baby to breathe underwater. For example, babies have been born in the Mediterranean and Black Sea where temperatures may be as low as 20 degrees centigrade (Harper, 1994; Lichy & Herzberg, 1993).

The optimal water temperature seems ultimately dependent upon the labouring woman's personal preference. If a labouring woman tends to be a warm-blooded person who hates overheated rooms, feels uncomfortable in the summer, or tends to 'throw off the bed covers' to keep cool at night, then the most appropriate temperature for her pool would be between 35-36 degrees centigrade. If a labouring woman is the type of person who never feels warm and tends to wear socks in bed in the middle of summer, then her most appropriate temperature would be slightly higher between 37-38 degrees centigrade. Therefore, the temperature of the pool should be adjusted to the level that the labouring woman feels is most comfortable (Lichy & Herzberg, 1993).

To conclude, there are various types of birthing pools to suit most women's needs. As a general guide, a pool that allows comfortable positions, can be filled up to the woman's breasts, and then easily emptied to an appropriate level at birth, so that she may breastfeed without water entering the baby's mouth, seems most useful. In addition,

if a labouring woman plans to use a portable pool, then it is suggested that the couple practice inflating the pool to ensure that their equipment works and that it can be inflated quickly. If no automatic pump is available for inflation, then the pool should be inflated well in advance of the expected due date to avoid any disappointments.

Position. The most efficacious position for labour tends to be the most comfortable position for that particular woman in labour (P. Simkin, personal communication, October 7, 1995). Women who labour in a birthing pool find it easier to move more freely and thus to find their most comfortable position. Positions that open up the pelvis widely to assist the baby's descent are easily attainable in a pool (Balaskas & Gordon, 1992; Church, 1989; Daniels, 1989; Lichy & Herzberg, 1993). The most common comfortable position seems to be the *hands and knees* position. Nightingale (1994), Odent (1994), and Rosenthal (1991) have also found this in their work. Women seem drawn to this position because it opens the pelvis up well with minimal or no pressure on their lower backs:

> It is not by chance that so many women find this position spontaneously and hold it for a long time; it (hands and knees position) effectively reduces pain, especially backaches. In addition, it is a sort of physical folding inward that makes it easier for a woman to ignore external distractions. This position resembles the posture of prayer, which itself is a transition to a different state of consciousness. Kneeling also seems to play an important role from a mechanical point of view. In the case of posterior presentations, which often cause the longest and most difficult labours, it facilitates rotation of the baby's head in the pelvis. Since the heaviest part of the infant's body is its back, the baby will tend to turn toward the front of the uterus when the woman is on all fours. (Odent, 1994, p.41)

Sitting, floating, and *lying back* in the pool are also comfortable positions for labour. It is not difficult to imagine how *sitting* and *lying back* could be perceived as comfortable positions. *Sitting* allows the labouring woman's legs to rest completely if necessary. *Lying back* in a pool helps the labouring woman to relax by allowing her body weight to rest on either her partner, labour support person, or the back of the tub or pool. As for *floating,* no known research is available supporting this kind of position in labour. Logically, however, if the labouring woman is able to float completely, then it is conceivable that she could achieve full muscle relaxation since the water would be supporting her weight and not her leg, arm, or back muscles. If she can achieve deep relaxation, then she is in a position that is ideal for her.

Although *squatting* tends to be an uncomfortable position for women who labour in water, *squatting* or the *hands and knees* position are often used when birth is imminent (Nightingale, 1994; Rosenthal, 1991). An advantage to being in either the *hands and knees* position or the *squatting* position is that if the women feels uncomfortable and needs to change her position, then she can easily adjust between these two positions.

To conclude, the best position for labour tends to be the position that the labouring woman finds most comfortable. If a women is experiencing back labour with her contractions, then the *hands and knees* position or *floating* are effective positions that facilitate the progression of labour.

Newborn Outcomes. Women who have more than one child comment that their children either liked or disliked water depending on the type of birth they had. If a

newborn was born from a waterbirth, then the newborn seemed more alert, happy, relaxed, and drawn to water. Balaskas and Gordon (1992), Jackson, Corsaro, Niles, Stange, and Haber (1989), and Limburg and Smulders (1992) concur with this claim. In contrast, any siblings who were the result of a 'land' birth reacted to the water very differently and hated their bath time when they were newborns compared to their sibling birthed in water. No known research exists that supports this claim.

Gradert et al. (1987) found that there were no differences, between Apgar scores and stress responses, between newborns whose mothers laboured in water during birth and newborns whose mothers did not. Interestingly, Lichy and Herzberg (1993), who wrote The Waterbirth Handbook, which Odent states "will become the Bible of Waterbirthing" (p. 10), also feel that water does not make the difference in how newborns will behave following a waterbirth. It is Lichy and Herzberg's contention that the important distinction is whether or not the mother had a 'gentle childbirth':

> It's the gentle childbirth that's important; it's the immediate bonding between mother and baby that makes the difference. Whether the baby is born into water or not is almost incidental. Being born into water doesn't necessarily make babies more intelligent, well-balanced or happy than babies who are born on dry land -- it simply reduces the stress of being born. But mothers often wonder whether their children's personality or character is linked to the kind of birth they had. (p. 54)

As a final note, not all caregivers agree on how soon the newborn should be brought to surface after birth. Igor Tjarkovsky, who pioneered waterbirth in the early 1960s (Sidenbladh, 1983; Stanley, 1995), is a proponent of slow emergence. However, most caregivers follow Odent and Rosenthal who favor rapid emergence. To Odent and

Rosenthal, rapid emergence means that the newborn is brought up to the surface quickly, but gently after birth (Daniels, 1989; Odent, 1983; Rosenthal, 1991). Although Odent and Rosenthal feel that newborns can be safely birthed in water, they do not support slow emergence for fear of unnecessary risks and no known benefits (Rosenthal, 1991). Based on experience, Odent contends: "... that the newborn's first breathing is triggered by contact with the air and the sudden difference in temperature. There is no risk of inhalation of water" (Odent, 1983, p. 1476).

Unique and Significant Findings

In the following section the unique and significant findings of this study will be highlighted. These findings will be related to the few other existing studies and other related literature. The unique findings of this study were: *context,* each participant's *process* of labouring in water, and *maternal outcome.*

Context. As discussed in Chapter IV, *context* explains how the participants first heard of waterbirth and what kind of influences this primary source had on their decision to use water in labour and or birth. The findings indicated that the participant's *midwife* was the most commonly cited source for information on waterbirth. This was not surprising as a midwife is considered an expert in normal childbirth. Therefore, any information that the woman's midwife conveys about labouring and giving birth would significantly affect the woman's decision about how she would labour and give birth.

A second source that greatly influenced womens' ideas about waterbirth was the *media.* In particular, the article that was written on waterbirth in the Edmonton Journal,

and *birthing films* that were viewed in prenatal classes, were particularly popular. This is important because it is reassuring to know that information about waterbirth can be conveyed effectively even if a pregnant woman does not have a midwife as a primary caregiver. Only one of the participants first heard of waterbirth from a friend. Finally, no known research exists on how women first learned about waterbirth and the influences that had a significant affect on their decision to have a waterbirth. Next, secondary factors that influence womens' decisions to have a waterbirth will be given.

Support and *socialization* are considered secondary factors that have a significant effect on whether or not a women will have a waterbirth. As was explained in Chapter IV, *support* refers to the positive or negative influences that the woman's family and friends had on her decision to have a waterbirth. Although responses from family and friends were both positive and negative, a common conclusion was that women cared about how their family and close friends felt about their decision. No known research to date documents the effect that *support* has on pregnant womens' decisions about birth prenatally. However, there is some evidence suggesting that *support* during labour significantly influences how well women will do in childbirth. Here, support refers to the presence of a helpful female family member or friend when the woman is in labour.

Research to date on *support* during labour suggests that human, physiological support significantly facilitates the woman's chances of having a natural childbirth (Hedstrom & Newton, 1986; Larimore, 1995). Of particular importance is the presence of a 'doula', or female support person who has experienced normal childbirth, throughout

labour. Moreover, if this female support person can be present at the beginning of labour, then the woman's chances of having a safe and manageable labour and birth are greatly increased (Larimore, 1995). Even though some of the women in this study felt a lack of support, their experience was perceived as positive in the end. Perhaps having a waterbirth made the difference for these women.

Although water is one way to have a 'gentle' birth, it seems that having water makes the difference. Two of the women in this study had previous 'gentle' births at home. They found that the water made labouring and giving birth much better since it was easier to find a comfortable position in the pool and the water helped them to focus on the work of the next contraction. They also felt that labouring in water made their labours go much more quickly compared to their previous birth experiences when water was not used. Therefore, having water made a difference for these two women.

Consider two women in labour, one who is using water and another who is not, and both of the women have little support. The woman who uses water in labour will more likely have a more positive birth experience. It seems that women who use water in labour benefit from the attributes of water, have an increased ability to concentrate on the work of their labour, and have freedom of movement in the pool. All of these things help to keep a woman's mind on herself and her baby instead of everything else that is or should be happening for her during childbirth.

Socialization is the second factor that refers to how pregnant women respond or associate themselves with other women and their newborns who have had waterbirths. In

this study, women felt encouraged and more confident about trying a waterbirth once they witnessed or heard the experiences of other women in birthing films or from friends and family. Although no known research exists that discusses the influence that *socialization* has on womens' decision to have a waterbirth, Bergum (1989) aptly describes how hearing the stories of other womens' experiences can affect them personally. Perhaps this is why the women in this study connected with the women in the birthing films and ultimately decided to try a waterbirth after all:

> Knowledge has been lost in the surge toward 'research data' and 'information' which to be considered valid must be objective, factual, and replicable. Stories, in contrast, are contextualized, personal knowledge, never replicable, and full of life experience which is not explained. Thus, with stories, nothing is forced on the (woman), as with interpretation or analysis. The (woman) can enter the story in a manner that ties the (woman) to the story in a personal way. (p. 13)

It seems that women, who decide to have a waterbirth after witnessing or hearing the waterbirth experiences of another, connected with these other women in such a way that they felt at 'one' with this person who before the experience was a total stranger. Therefore, *socialization* is important for women who are contemplating a waterbirth.

Process. It is not uncommon for labouring women to employ routines or techniques to help cope with their labour. Routines and techniques such as rocking, walking, breathing patterns, massage, and objects to help women focus on their breathing or to feel distracted by the pain of their contractions are just a few of many possible coping mechanisms used today (Bevis, 1993; Simkin, 1995; Varney, 1987). However, a unique finding from this study is that it is beneficial for labouring women to employ a

routine or technique in conjunction with warm water immersion. Together, the labouring woman finds the *process* that works best for her since the water is conducive to freeing the labouring woman to try different techniques until the most suitable method is found. Having water allows the labouring woman to concentrate on her needs instead of being distracted by anything else that may be occurring. In this sense, water is a medium that facilitates the woman finding an effective coping routine that is best suited to her personal needs. In this study, methods that were identified as effective for coping with labour were: *focusing, visualizing, distracting,* and *vocalizing.*

Focusing means that the woman is concentrating on the task at hand, preparing to work on the next contraction, and not concentrating on a particular object or abstract thought. Having water facilitated their abilities to focus because they were free from any distractions that may have been occurring around them. Here, water seems to work because it helps the woman to relax, focus, and be more aware of what her body is doing. No known research exists that discusses the association between water and an increased ability to focus on the work of labour. A discussion on *visualizing*, the other commonly used technique that was used by the women in this study follows.

Women who used *visualizing* techniques found it easier to choose and then concentrate on their chosen images because of the water. Images were both linear and abstract. Having water did not seem to narrow the woman's creativity to use one particular image such as 'rhythm and waves' (Kitzinger, 1978). It seems that water enhanced their creative powers to find the image that was best suited to their needs and

personality. Brown (1982) describes how warm water facilitates the woman's ability to visualize by picturing her contractions as 'rhythm and waves':

> A labouring woman can picture her contractions as waves on the ocean, building in intensity to a peak, then crashing on the shore as the contraction diminishes. The woman has a tub of warm water touching her skin to concentrate on while she is dissociating. (p. 15)

Tjarkovsky's method includes working on the woman's state of mind while she is pregnant. To eliminate fear of birth and water, Tjarkovsky instructs pregnant women on meditation and visualization techniques. He instructs women to visualize "their pelvic skeletal area as expanding and opening, so that the baby's journey through the birth canal will be less painful and less stressful. Tjarkovsky also suggests visualizing the fetus inside the womb surrounded by a golden light" (Brown, 1982). Although Tjarkovsky inherently knew the value of visualization for labour, a connection did not seem to be made to water and the facilitation of visualization in labour. The third technique that women used while labouring in water was *distracting*.

Distracting referred to how women used an actual object, that could potentially be observed by an external labour support person, to concentrate on during labour. Again, having water facilitated the women dissociating themselves from the pain of the contractions by using *distracting* behaviours as they were able to relax and feel relatively comfortable in water. No known research discussed this phenomena. *Vocalizing*, the last technique that was employed by the women in this study will now be discussed.

Vocalizing, refers to the ability that some women have to use their voice in a

controlled manner to facilitate their progression of labour. Waterbirth may aid in this personal way of coping because it helps the labouring woman to relax and feel 'comfortable' which also facilitate her ability to maintain self-control. Together, water and vocalizing seems to be an effective way for coping with forthcoming contractions.

Although there were no studies that examined the effect that water as a medium has on vocalization, there are studies which posits that it is possible to determine what stage of labour a women is in by listening to her sounds. Daniels (1989) shares an experience that reflects this phenomenon when visiting Michel Odent at his hospital in Pithiviers, France:

> One evening, a woman came to the hospital to have her baby. He (Odent) offered her the bath, which she gratefully accepted.... After a while Dr. Odent suggested that we leave so the woman could be alone with her husband as he knew it would be a couple of hours before she would deliver the baby. From the next room we could hear her cry out as she (had) a contraction. Dr. Odent immediately put up his hand to signal silence, cocked his ear and listened carefully. When she finished moaning he said '... good, very good, everything is fine.' I (Daniels) was fascinated to learn that he was able to read the progress of her labour solely by listening to her sounds. (p. 202-203)

Fuller, Roberts, and McKay (1993) would concur with this finding. They found that experienced obstetric nurses and midwives could determine if a woman was beginning to feel the urge to bear down, was experiencing pain, or was feeling frightened. Sounds were differentiated as 'work', 'childlike', and 'out-of-control' respectively. The women in this study reported that the tone or pitch of their vocalizations changed with the intensity of the contractions. To maintain 'control', their voice started quite "high in their throats" and gradually became lower with the aid of their diaphragm as labour

progressed. For these women, labouring in water made the difference because it relaxed them sufficiently for them to maintain their sense of control.

Alternately, Kitzinger (1978) suggests using *vocalization* to aid a woman in maintaining her 'rhythm and waves' image:

> It is helpful if the woman always listens to the sound of her breathing, so that her conscious appreciation of its rhythm prevents any possibility of it 'running away' with her. If at any point she loses the rhythm, tensing her throat muscles, or has the impression that her breath is being 'caught', she merely blows out crisply as if blowing a balloon away from her, and carries straight on. (p. 126)

To better understand how these personal ways of coping worked, it is helpful to once again recall Melzack and Wall's (1965) gate control theory of pain. Water seems to affect the activity of the *large diameter nerve fibers* which is the first way the gate can be 'closed'. The second way that closure of the gating mechanism can be affected seems to be through inhibitory impulses from the *brainstem*.

Melzack and Wall (1965) propose that the gating mechanism can be controlled with excessive sensory input through the reticular system in the *brainstem*. Thus, focusing, visualizing, distraction, and vocalizing seem to sufficiently influence the reticular system in the *brainstem* to pass inhibitory impulses that close the gate to the painful impulses that are the result of labour contractions. Therefore, it is possible that the water in conjunction with a woman's personal coping technique are considered 'excessive sensory input' that sufficiently close the gate rather than if water or a techniques were used alone. A final theme that was considered unique and significant to this study, *maternal outcomes*, will now be discussed.

Maternal Outcomes. The labouring woman's *mind set* and whether she considers herself a *shower or bath person* play an important role in determining how positive her waterbirth experience will be. Since *mind set* seemed to encompass a number of factors, this theme was further differentiated into four distinct categories: *mind set, warm water immersion, waterbirth,* and *affinity for water.*

The labouring woman's *mind set* prior to entering the birthing pool clearly effects how well she will labour and or give birth. More specifically, it determines whether or not the woman's 'frame of mind' toward her labour, birth, and using water is positive or negative. If a woman has a positive *mind set,* then she will perceive that her labour, birth, and waterbirth experience was positive despite the 'clinical' outcome. If a woman has a negative *mind set,* then she will perceive that her labour, birth, and waterbirth experience was negative even if her primary caregiver may have perceived that at least part if not all of her experience was positive. In the event that a pregnant woman seems to have a negative mind set, it is important to assess where these feelings are coming from, and then to work on these feelings with her throughout her pregnancy. Therefore, it is important to assess how a pregnant woman is feeling about her forthcoming experience.

In this study, one woman was considered a negative case because her experience was different from the other ten women. After examining why this was the case, it would seem that this woman had a negative *mind set;* whereas, the other ten women, including the woman who was considered a 'borderline' case, had positive *mind sets.* To recall, the

woman with the negative *mind set* felt that she was not progressing well with her labour and was feeling out of control with her childbirth experience. Lowe (1991) suggests that "a woman's confidence in her ability to cope with labour contributes significantly to her perception of pain during labour" (p. 457). Lowe uses 'self-efficacy theory' to help explain why this may be the case.

In self-efficacy theory it is proposed that an outcome from an event (birth) involves the woman's assessment of her ability to perform the behaviours or activities needed for a particular outcome. It is her belief in the outcome behaviour and her ability to cope with the behaviours or activities needed that will influence the success or failure, in this case, of the waterbirth experience. In other words, it is a 'self-fulfilling prophecy'. If a woman perceives that her experience will be negative, then it will be. Green (1993) concurred with this point. Therefore, this demonstrates the importance of assessing a woman's *mind set* throughout pregnancy.

There was one participant in this study who had been influenced by her family and who believed, based on their experience, that the birth would be difficult. She was the only woman who did not perceive the water to be helpful and who did perceive her birth experience as awful and complicated. Another reason why this woman may have perceived her experience negatively may be related to her anxiety level before birth. Wuitchik, Hesson, and Bakal (1990) suggest that womens' prenatal concerns and anxieties may manifest themselves as labour progresses. In addition, these concerns and anxieties will begin to take precedence over the coping mechanisms that may have been

working before. Green (1993) concurred with these findings: "Anxiety about the pain of labour was a strong predictor of negative experiences during labour ... and lack of satisfaction with the birth..." (p. 65). Therefore, it seems important to assess a woman's *mind set* prenatally and to intervene as necessary throughout her pregnancy. Next, a discussion of how a woman's plans of labouring and birthing in a particular way are affected by her mind set.

In this study, all of the women who intended to labour in water did; of these five women, two decided in labour that they would also like to give birth in water. Of these two, only one was able to give birth in water because she unexpectedly needed to go to hospital. Interestingly, all of the women who wanted *warm water immersion* in labour had their expectations met. It seems that these women had something in common; their minds were *set* on *warm water immersion.* Since their minds were *set* on *warm water immersion*, this would likely indicate that they would have a higher chance of experiencing a positive waterbirth experience.

There were six women who intended to labour and birth their baby in water; of these six women, only one had the opportunity to give birth in water. Although not all of the women had their expectation of having a *waterbirth* met, they all perceived that their birth experience was positive. One might speculate, based on Green's (1993) work and Wuitchik, Hesson, and Bakal's (1990) work that these women would perceive that their experience was less than positive because their expectations were not met. However, the difference in this case may be whether or not these six women approached labour with an

'open' attitude. For instance, they may have just wanted a positive outcome -- a safe labour and live birth of their baby. Therefore, what seems important in this case is not whether you intend to labour only or labour and birth in water, but how you approach your childbirth experience, having an '*open mind set*' ... being open to possible adaptations in your plans. Next, the final aspect of *mind set* that is important to consider -- *affinity for water.*

Affinity for water refers to women who consider themselves to be 'water people'. Water people feel drawn to water and love water in every way. Although no known research exists that explores whether women who choose to have waterbirths have an *affinity for water*, it would be interesting to discover if this has an important influence over how well women will do with their waterbirth. Interestingly, women who consider themselves to be water people also prefer to have baths over showers.

Women who consider themselves to be *bath persons* tend to have more successful waterbirth experiences than women who consider themselves to be *shower persons.* Of the nine women who commented on whether or not they preferred to have a shower or a bath, all but one of the women who considered themselves to be *bath persons* had enjoyable and effective waterbirth experiences. The one woman who considered herself a *shower person* found that her waterbirth experience was enjoyable but ineffective. No known research discusses this phenomenon; however, a possible explanation is proposed.

If one examines the concept of *shower person* and *bath person,* then an interesting conclusion may be drawn. If you ask a *shower person* why they prefer to take

a shower, they may likely respond with 'it's a quick and refreshing way to wash up.' If you ask a *bath person* why they prefer to take a bath, then they will most likely respond with 'for relaxing or winding down after a long day.' If warm water immersion did not work for the shower person mentioned above, then perhaps she was not used to the deep relaxation that resulted once she entered the pool. Therefore, it is possible that *bath persons* can achieve a higher level of relaxation and can use it to their advantage compared to *shower persons.*

With this in mind, it is conceivable that a *shower person* can become very relaxed to the point that contractions slow down or stop because they are not used to this level of relaxation. For instance, if you put a *shower person* in a hot tub, you may notice a similar response -- deep relaxation. On the other hand, *bath persons* are familiar with this level of relaxation. Therefore, *bath persons* seem better able to manage the deep relaxation that is possible with a waterbirth, and can make this level of relaxation work to their advantage. Instead of the deep relaxation making their contractions stop or slow down, the deep relaxation allows *bath persons* to rest and or sleep in between the contractions so that their energy can be reserved for birthing.

IMPLICATIONS OF THE FINDINGS

The results of this study indicate that nearly all the women who used water in labour and or birth had more enjoyable and effective childbirth experiences. The satisfaction and empowerment that women gain from a waterbirth experience should not be underestimated or discounted. Since waterbirth seems to be an effective, enjoyable,

way to labour and or give birth with minimal or no intervention, waterbirths should be available as an option. Daniels (1989) would agree: "Although it may seem strange or different to some at first, when evaluated carefully from the physical, emotional, and spiritual aspects, it is clear that waterbirth represents important progress in the field of humanistic childbirth practices" (p. 204). As a result, there are strong implications for nursing and midwifery research, education, and practice.

Implications for Research

This study was conducted in order to explore womens' perception about a phenomenon in which very little empirical literature exists. In addition, this study was conducted in the province of Alberta where most of the waterbirths occur at home. Future studies which examine this phenomenon in birthing centers and hospitals, should address the type of women who may be best suited to have a waterbirth. Continued research is needed to confirm or refute the findings that emerged from these data.

Future research into the perceptions of women who have waterbirths in hospitals is needed to determine if it is possible to have as positive an experience in settings that are traditionally less empowering and stressed by health care reform. Replication of this study in various hospitals and across other provinces would help determine if indeed the environment where a waterbirth takes place is an important factor to consider. In addition, by assessing the waterbirth experiences of women in different provinces, it may be possible to determine if certain levels of health care reform are deleterious to a woman's experience of waterbirth.

As noted earlier, midwives were the primary caregivers for seven out of the ten women in this study. Future research that is conducted in hospital and birthing center settings may need to explore if a certain type of caregiver is more conducive to supporting a women in labour who is contemplating a waterbirth. Since midwives were the primary caregivers in this study, it is difficult to determine if this was a factor that influenced how women perceived their experience.

A final recommendation for future research would be to explore whether women, who prefer to take baths rather than showers, have more efficacious waterbirth experiences. If this is the case, then it may be possible to use the findings from this study and future studies of this phenomenon to develop an assessment tool for women who are considering a waterbirth option for labour and or birth. By having an assessment tool developed, it may be possible to eliminate any untoward waterbirth experiences from occurring. In addition, women who may be well suited to a waterbirth option, but had never considered the notion of a waterbirth prenatally may be informed of this viable option.

Implications for Education

Educational programs for health care professionals should include information on the experiences of women who have waterbirths. Until health care professionals can fully appreciate waterbirths from a woman's perspective, waterbirth may continue to be unavailable as an option for women in labour. Health care professionals who work with labouring women need time to appreciate what a waterbirth experience is like for

women. Once health care professionals understand what a waterbirth experience can offer for some women, then childbirth may once again be perceived as a normal part of life and not another disease that needs to be supervised with scrutiny in the traditional delivery room setting. Although water has been used for many years to treat illness, it has only comparatively recently become used as a medium in which women labour and give birth in Canada. Learning about waterbirths has the potential of changing or improving the current maternity practices known today.

Implications for Practice

Today, women predominantly labour and birth in hospital settings (Jordan, 1993). It is imperative that health care professionals, working in hospitals, are informed about all the options that are available to women who come to the labour and delivery unit. This is important for two reasons. First, water is a medium that has been used for years and is valued for its healing properties. Second, water is efficacious for women in labour and seemed to help women so that they could tolerate or feel more in control of their childbirth experience compared to women who labour and give birth on land.

Historians have provided descriptive and anecdotal evidence that water was a medium that was valued for its healing properties to treat illness. Although childbirth should not be considered an illness or disease that must be 'treated' in hospital only, for the most part, it is still considered an illness when one considers all the unnecessary prenatal tests and meddlesome interventions that a woman experiences that lead to a cascade of problems that could have been prevented (Johnson, 1995; Keirse, 1995;

Larimore, 1995; Thorp, 1995). Therefore, like childbirth, water should be re-examined and utilized as a medium that is efficacious for some women in labour.

Although the aim of maternity care may be family-focused, it soon becomes clear that it is the obstetrical staff of a hospital, and not the labouring woman, who control the birth experience. For example, the labouring woman is expected to remove her own clothes and replace them with a hospital gown. Also, certain interventions could be perceived as symbolic of removing the woman's personal control over the birth experience. "The intravenous is the symbolic umbilical cord to the hospital. It makes a birthing woman appear to be dependent on the institution for her life, just as the baby in the womb depends on her for life" (Davis-Floyd, 1994, p. xii). This is not to suggest that careful monitoring of the woman and the unborn child in labour in unimportant. Indeed, it is important. Although not specifically addressed in this study, the fetal heart can be monitored by using an doppler.

Women who have waterbirths claim that they feel more in control of their childbirth experience compared to women who do not use water in labour or birth. Therefore, health care professionals need to use this information as an opportunity to improve or change their current maternity practices. That way labouring women in the future will have a greater opportunity to have positive birth experiences whether their labour and birth occurs in a home, birthing center, or hospital setting.

Summary

In this study the researcher explored the experience of having a waterbirth from the woman's perspective. The findings from this study were divided into two sections: aspects of water and mechanics of using water. From these data, eight key themes emerged that revealed important components of a waterbirth experience: context, properties, process, attitude, tub/ pool characteristics, position, maternal outcomes, and newborn outcomes.

Research to date has focused primarily on the physiological aspects of water. Identified literature that discussed psychological aspects of water was mainly anecdotal and descriptive. The purpose and findings from this study focused on the woman's perception of waterbirth. The findings revealed that waterbirth is an enjoyable and efficacious way to labour and give birth for some women -- namely, water people or baths persons who have a positive mind set toward their labour, birth, and using water in childbirth.

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Appendix A

Perception of Birth Experience: Visual Analogue Scale

The following words have been used by women to describe their experience in labour. Please look at these words and put an **X** on the line at a point which you believe reflects your own birth experience.

Example: Cold	_____	Hot
Fast	_____	Slow
Dangerous	_____	Safe
Heavenly	_____	Hellish
Rough	_____	Smooth
Pleasant	_____	Unpleasant
Good	_____	Bad
Difficult	_____	Easy
Ugly	_____	Beautiful
Realistic	_____	Idealistic
Fair	_____	Unfair
Painful	_____	Relaxed

Adapted from: Pfoutz, S. K. K. (1990). Development of an instrument to measure satisfaction with patient care in the postpartum period. Unpublished doctoral dissertation, University of Michigan, Michigan. ('painful' and 'relaxed' have been added, but not validated).

Appendix B

Demographic Data Questionnaire (oral)

Current Birth Experience: Maternal Assessment
Age:
Occupation:
Previous Births: 0 1 2 3 4 (or more)

Primary Birth Attendant (midwife, physician, obstetrician):
Type of Birth:
Length of Labour:
Status of Membranes (before immersion):
Medication (used in labour):
Presentation (cephalic/ breech):
Intact perineum: yes no Episiotomy Tear
Complications:
Birth Attendants:

Previous Birth Experience(s): Maternal Assessment
Primary Birth Attendant:
Type of Birth:
Status of Membranes:
Medication (used in labour):
Presentation (cephalic/ breech):
Intact perineum: yes no Episiotomy Tear
Complications:
Birth Attendants:

Infant Assessment
Gestational Age:
Height:
Weight:
Apgars (at 1 and 5 minutes):
Meconium (present or not):
Suctioned (yes/no):
Other complications:

Sibling Assessment (if known)
Gestational Age:
Height:
Weight:
Apgars:
Meconium:
Suctioned:
Other Complications:

If the infant was delivered in water, how long (in seconds) did it take before the baby was out of water?

Appendix C

Information Letter

Project Title: Waterbirths: Women's Perception of Warm Water Immersion for Labour
Researcher: Monica Sager, RN Telephone # (403) 988-8766

The purpose in this study is to discover what it is like to labour in warm water. To be eligible for this study, you must have experienced a waterbirth. If you decide to be in this study, you will be interviewed once or twice. Your interview will be in person and will last for approximately 60 minutes each time. It will be set at a time that is good for you. I will ask you what your labour and birth was like. I will ask you how and when did you decide to have a waterbirth. Near the end of the interview, I will ask you more specific questions like your age, the length of your delivery, if you had any complications, and how the baby was right after the delivery. After the interview, I will ask you to fill out a scale that describes in words what your labour may have been like for you. A second interview may be needed to help me understand things you have told me. This interview could be over the telephone and would likely be shorter than the first one. The interview will be tape-recorded but your name will not be revealed. Instead, a fake name will be used to keep our interview confidential.

A secretary will listen to the tapes and make copies of the information. Only I and my committee members will read the typed copies. They will not know that it was you. The information will be kept secret. I will store your name, address, and consent form in a locked place that is separate from the tapes. The tapes and typed copies will also be locked up and I will be the only one with the keys. The tapes will be kept for at least seven years. A report will be written about the study. It may contain some of your own words, but your name will not be mentioned.

You are welcome to join in this study. You can decide to leave the study at anytime, and refuse to answer any question. You can also leave out information at anytime, and ask that it not be used. The child welfare act states that child abuse or neglect must be reported. Child abuse is the mistreatment or neglect of children. Child abuse may be physical, emotional, or sexual. It threatens the well-being or security of the child. If you tell me something about child abuse or neglect which is happening, or that a child is at risk, I will talk to you about it. I will also need to provide this information to child welfare. Otherwise, I will keep everything you tell me in confidence. If you tell me about an unsatisfactory waterbirth or postpartum experience, I will talk to you about it and assist you to make contact with a community health nurse. One benefit from joining in the study will be that the information you have shared will be used to help other labouring women in the future.

If you are interested in joining in on this study, or if you have any questions, I can be reached at the above number. Thank-you for taking the time to consider this study.
Sincerely, Monica Sager

Appendix D

Informed Consent Form

Project Title: Waterbirths: Women's Perception of Warm Water Immersion for Labour

Researcher:
Monica Sager
MN candidate
Faculty of Nursing
University of Alberta
(403) 988-8766

Thesis Supervisor:
Dr. Peggy Anne Field
Professor of Nursing
Faculty of Nursing
University of Alberta
(403) 492-6248

The purpose in this study is to discover what it is like to labour in water. The focus of this study will be on your personal experience of waterbirth.

Your participation in this study will involve the following:

-I would like to meet with you prenatally to set up a time for the interview.
-You will be interviewed once or twice.
-The first interview will be in person and will last about an hour. The second interview may be in person, or over the phone, which ever is best for you.
-The interview can be done in your home or another place that is convenient for us both.
-The interviews will be tape-recorded by the researcher, unless you wish otherwise.
-There will be a scale to fill out that describes what your birth may have been like for you.
-You will also be asked some questions about the technical aspects of this birth and previous births if relevant.

Only the researcher and the typist will listen to the tapes. The reseaarcher, typist, and thesis supervisors will read the typed copies. The tapes and typed copies will be kept locked-up. The researcher will be the only one with a key. The tapes, transcripts, and notes will be kept at least seven years after end of the study. Consent forms will be destroyed after five years. A report will be written about the study. The interviews may be used for a future study, but ethical clearance will be obtained first. The information and findings from this study may be used at conferences or published in a journal. Some of your comments may be used, but your name will not be used. I will assign a fake name to your comments to keep your name secret.

Your participation in this study is your choice.

-You can decide to leave the study at any time by calling the researcher at the above telephone number.
-You can refuse to answer any question. You can leave out information at anytime as well.
-You might not benefit from this study, but you may help other women in the future.

This is to certify that I _____ (print name) agree to participate in this research project. I am aware of the purpose of the study and what is involved. All questions have been answered to my satisfaction. I am aware that each interview will be tape-recorded by the researcher. The child welfare act states that child abuse or neglect must be reported. Child abuse is the mistreatment or neglect of children. Child abuse may be physical, emotional, or sexual. It threatens the well-being or security of the child. If I tell the researcher something about child abuse or neglect which is happening, or that a child is at risk, the researcher will talk to me about it. The researcher will also need to provide this information to child welfare. Otherwise, all other information will remain confidential. If I tell the researcher about an unsatisfactory waterbirth or postpartum experience, the researcher will talk to me about it and assist me to make contact with a community health nurse. I understand that I am free to withdraw from the study at anytime. I have been given a copy of this form to keep. I can call the researcher or her supervisor at anytime if I have questions or concerns.

_____ _____
Participant Date

_____
Researcher

If you would like to receive a report of the findings from the study when it is finished, please leave your name and address below.

Name: _____

Address: _____

Appendix E

Interview Guide

Tell me about your experience of labouring in water, from the time you decided to have a waterbirth, to the actual labour in water?

Probe Questions (to be used as needed):

How did you first hear about waterbirths?
When did you first consider labouring in water?
What was it like to labour in water?
What were the reactions of your family and friends when you told them you wanted to labour in water?
How did their reaction affect your decision to labour in water?
Did you stay in water throughout your labour? If not, why did you decide to leave the water?

For Multigravidas:

How did this birth compare to your previous birth experience(s)?

For women who laboured and then gave birth in water:

Tell me about your experience of labouring and then giving birth to your baby in water, from the time you decided to have a waterbirth to the actual labour and birth in water?

Probe Questions (to be used as needed):

When did you decide to labour and then deliver the baby in water?
What was it like to labour and give birth to your baby in water?
Did you leave the water before delivering the afterbirth?
What were the reactions of your family and friends when you told them you wanted to labour and give birth to your baby in water?
How did their reaction affect your decision to have a waterbirth?
Did you stay in water throughout your labour? If not, why did you decide to leave the water?

For Multigravidas:

Was this your first waterbirth?
How did the experience differ from the first birth?
What were the reactions of your family and friends when you told them you wanted to labour and give birth to your baby in water?
How did their reaction affect your decision to have a waterbirth?